DOMESTIC ENGINEERING

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BY
Domestic Engineering, (Inc.)

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CHANGE OF ADDRESS.—The old address should be given as well as the new, and notice should be received a week in advance of the desired change.

NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of DOMESTIC ENGINEERING on Wednesday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Wednesday of the week of issue, but no proof can be shown.

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Suggestion:
Cut out; frame neatly; put in show window; change weekly.

If you are an employer of labor you surely feel that in sanitary and heating appliances your factory shall contain the best provisions available for the comfort and convenience of your working force. Capital invested in a good sanitary equipment returns a large interest in greater contentment of working force, higher efficiency of labor, economy in water supply and necessary care. Factory sanitation, heating and ventilation is an important branch of work which should not be entrusted to inexperienced contractors.

How Plumbing may be Doubled

If I should come to the local associations of master plumbers, those influential organizations of tradesmen scattered all over the United States, and should say that I had a plan by which the amount of plumbing work done in their localities could be doubled, and that this could be done so that the general public would recognize that I had recommended something which would benefit the entire community and not simply be a source of private gain to the plumbing trade, I believe **I would be welcomed with opened arms.** Yet this is exactly what I propose to do in this editorial, and if it is read carefully and its suggestions followed tactfully, **there is no community** in the United States in which the suggestion would be carried out **in which the number of plumbing installations could not very readily be doubled.** The increase which would be given to the plumbing business, manufacturing, wholesale and retail, would be tremendous. Instead of slack work, our journeymen plumbers would be found too few to perform the labor involved; instead of dull business, our contracting plumbers would find themselves swamped with work; instead of the present light demand our wholesalers would find trade so active that their forces of distribution would have to be increased; instead of running factories at low speed, our manufacturers would find such an increased demand for goods that they would be unable to fill orders. This, in the language of our English friends, sounds like "a tall order," but it is nothing that cannot be accomplished in any community, but **the contracting plumbers are the people who must bring the desirable plan to fruition.** I have indicated that not only can this very excellent condition of affairs be brought about in the plumbing trade, but that the greatest nuisance of modern times can at the same time be eradicated. I refer to **the abolition of that virulent nuisance, the privy vault.** Chicago has tens of thousands of them; Baltimore has so many that its plumbing inspector is ashamed to estimate the number. Edw. Quinn, Supervisor of Plumbing, St. Louis, hides his face when you ask him how many St. Louis has, and the smaller the city the larger in proportion will be the numbers of this pestilent barbaric method of perpetuating the hateful life of decomposable and odorous organic substances. It goes without saying that no town can do away with the privy vault nuisance until the property so served is supplied with sewer and water supply. **This, then, should be the first point of attack,** and the master plumbers, through their own and other business organizations which they can influence, should provide for **the extension of sewers and water mains to the last possible limit.** But the work of abolishing the privy vault need not wait for the creation of public sentiment which will result in the extension of sewers and water systems, as in every city in this country there are hundreds and thousands of privy vaults still

in use on property which can be reached by sewer and water connections. **These should immediately be abated.** It is quite probable that your Health Department will say that it does not now have sufficient authority and backing in the city government to warrant the wholesale abolition of these pestilential spots. In that case it should be the first work of the master plumber **to secure the passage of an ordinance** which will clothe the Health Department **with the necessary authority to order the owners of property on which privy vaults are in use to replace them with sanitary plumbing** connected with the city water and sewer systems. For the purpose of placing before our readers the necessary machinery for carrying this great but easy reform into effect, we publish in this week's issue an article by Henry B. Davis, the efficient and wide-awake inspector of plumbing in the District of Columbia, who gives a law which is in effect in that district and under which these reforms can be carried out. With the necessary changes to suit local conditions, this regulation should be enacted in the form of an ordinance by every city in the United States, and then the Health Department, backed up by the **vigorous prodding which it should always receive from the local association of master plumbers,** would be able to abolish the nuisance of the privy vault and cause the substitution of modern sanitary plumbing. In no other way, **so simple and so beneficial to the general public,** can the plumbing trade be increased in volume.

I cordially commend to the Secretary of every local association of master plumbers in the United States the reading of this editorial at the next meeting of his association, followed by the reading of Mr. Davis' most excellent article. **Jno. K. Allen.**

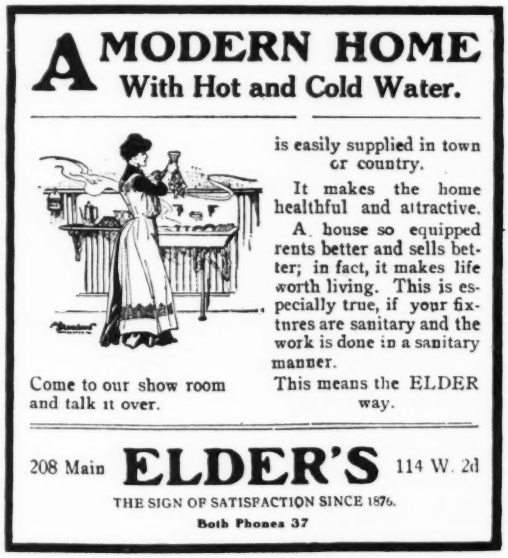
What Modern Advertising can do for the Plumbing and Heating Contractors

By A. P. Elder, of Ottawa, Kansas.

The present age reveals thousands of colossal fortunes built up by modern advertising methods. One has but to read the magazines and newspapers to see that the successful business man knows and believes in advertising. Persistent, pungent, pointed presentation of what you have to sell will bring phenomenal results. We who are restricted in territory to a county cannot of course go with the "Ladies' Home Journal" or "Saturday Evening Post" at a cost of $4,000.00 per page per issue, but we can present in our local papers neat, catchy head lines with attractive cuts of our specialties and tersely state their merits and our claims for the patronage of the readers, at a moderate cost that will surely bring an increase of business.

Helped by Manufacturers' Advertising.

Plumbers were slow to recognize this fact, but the efforts of manufacturers who have nationalized their advertising, have made it possible to get the benefit locally of efforts that have been made by manufacturing concerns to focus public attention upon the great importance of meritorious, sanitary plumbing fixtures. Some manufacturers will furnish electrotypes free of charge, and by careful observation of the successful advertiser's methods and


A MODERN HOME
With Hot and Cold Water.
is easily supplied in town or country.
It makes the home healthful and attractive.
A house so equipped rents better and sells better; in fact, it makes life worth living. This is especially true, if your fixtures are sanitary and the work is done in a sanitary manner.
This means the ELDER way.
Come to our show room and talk it over.
208 Main
ELDER'S
114 W. 2d
THE SIGN OF SATISFACTION SINCE 1876.
Both Phones 37

One of a series of advertisements which caused this firm to do 75% of all the plumbing business in a town of 5,000, with five competitors. "Go thou," etc.

a little special study and training one can soon qualify himself to reap the rich harvest that is waiting to be gathered through the modern methods of advertising.

Necessary Elements.

The essentials are:

1. Articles for sale that have merit.
2. People who possess the means to buy.
3. The article well displayed.
4. Then invest the articles in the mind of the purchaser with a value distinct from the idea of price.

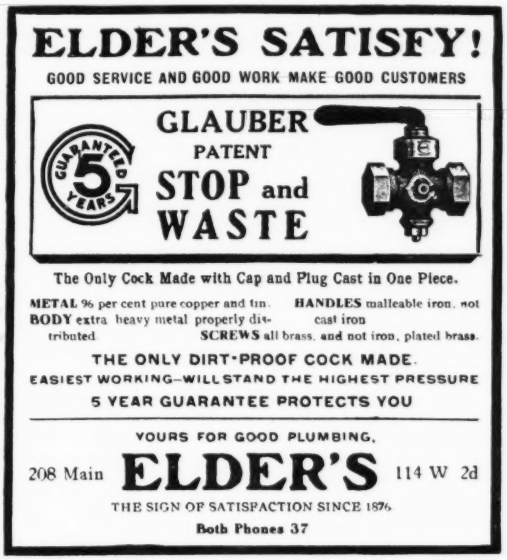
First Make a Show Room.

It is useless to start an advertising campaign until you have selected and placed in a neat and attractive show room articles that have merit. People who possess means to buy are numerous and are only waiting "to be shown." Plumbing fixtures are attractive if kept clean and neat and are well and properly displayed. A lady stenographer and bookkeeper in a plumbing display room will be valuable in performing her usual duties and in addition will generally keep the fixtures well dusted, and if

coached a little will show good ability as a saleswoman.

THE SPIRIT OF SUCCESSFUL SALESMANSHIP.

The four essentials above stated cover the whole subject. The first three need no extended discussion. The fourth then is the one of supreme importance: "To invest the article in the mind of the purchaser with a value distinct from the idea of price." We are aware that in the present day of catalogue house competition, that price cuts a great figure and when we do advertise a price on an article it should in reality be a last price, for absolute truth in all statements is necessary to establish confidence in the public mind. An advertisement run a year daily or weekly without change, that informs the readers that "John Smith, Sanitary Plumber, 214

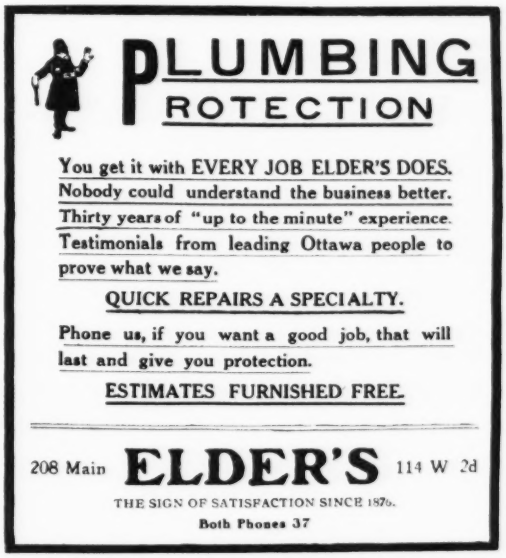

ELDER'S SATISFY!
GOOD SERVICE AND GOOD WORK MAKE GOOD CUSTOMERS
GUARANTEED 5 YEARS
GLAUBER
PATENT
STOP and WASTE
The Only Cock Made with Cap and Plug Cast in One Piece.
METAL 96 per cent pure copper and tin.
BODY extra heavy metal properly distributed
HANDLES malleable iron, not cast iron
SCREWS all brass, and not iron, plated brass.
THE ONLY DIRT-PROOF COCK MADE.
EASIEST WORKING—WILL STAND THE HIGHEST PRESSURE
5 YEAR GUARANTEE PROTECTS YOU
YOURS FOR GOOD PLUMBING,
208 Main ELDER'S 114 W 2d
THE SIGN OF SATISFACTION SINCE 1876
Both Phones 37

This firm shows it believes in advertising good goods. A sample announcement to educate the public as to what a good stop and waste should be.

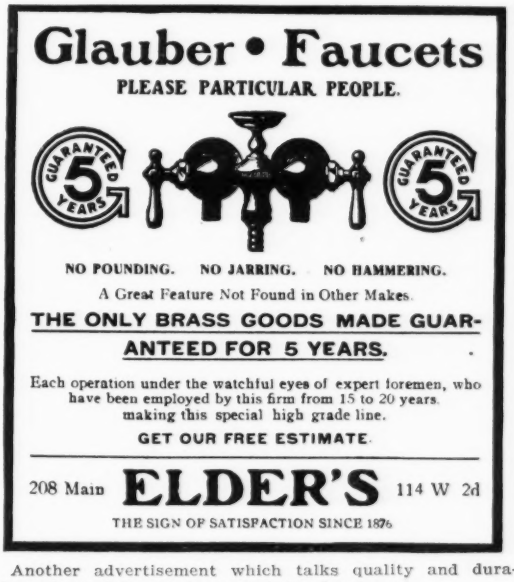
West Fifth Street, Kanopolis, Kansas, all work guaranteed," will bring but poor returns; but the same sized space changed daily or weekly, with a neat cut and a catchy head line that states specifically what John Smith has to offer, or what claim he has upon the public for patronage, will be read and remembered by a large percentage of readers.

DO NOT ADVERTISE PRICES.

Ordinarily we do not believe in advertising prices but rather prefer to *describe an article in a manner to create a desire to own it;* but occasionally we run an advertisement offering a 5-foot 3-inch roll rim bath-tub for $15.00. When our friends in the country then want to test our claim for meeting mail order competition, they turn to their catalogue and find a similar tub is $16 and $18 in Kansas City or Chicago, and immediately we are vindicated in their minds; and, of course, when the customer comes to our display room we show the article exactly as presented, but we do not fail also to show a tub upon which an adequate profit is added to the cost price.


PLUMBING PROTECTION
You get it with EVERY JOB ELDER'S DOES.
Nobody could understand the business better.
Thirty years of "up to the minute" experience.
Testimonials from leading Ottawa people to prove what we say.
QUICK REPAIRS A SPECIALTY.
Phone us, if you want a good job, that will last and give you protection.
ESTIMATES FURNISHED FREE.
208 Main ELDER'S 114 W 2d
THE SIGN OF SATISFACTION SINCE 1876.
Both Phones 37

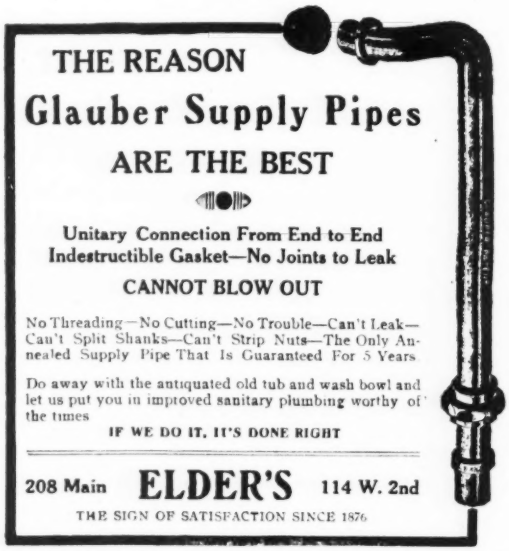
In this advertisement, copied from a local newspaper, it will be seen there is no appeal to that illusion that people want cheap plumbing.


Glauber • Faucets
PLEASE PARTICULAR PEOPLE.
GUARANTEED 5 YEARS
GUARANTEED 5 YEARS
NO POUNDING. NO JARRING. NO HAMMERING.
A Great Feature Not Found in Other Makes.
THE ONLY BRASS GOODS MADE GUARANTEED FOR 5 YEARS.
Each operation under the watchful eyes of expert foremen, who have been employed by this firm from 15 to 20 years making this special high grade line.
GET OUR FREE ESTIMATE.
208 Main ELDER'S 114 W 2d
THE SIGN OF SATISFACTION SINCE 1876

Another advertisement which talks quality and duration of service—not an appeal to cheapness.

ALWAYS RUN AN ILLUSTRATION.

We find it advantageous to run a cut of what to you seems so simple an arrangement that it would seem hardly worth while to assume that everyone was not familiar with it. I refer to a kitchen sink with a pitcher spout pump on a bracket at the end,


THE REASON
Glauber Supply Pipes
ARE THE BEST
Unitary Connection From End to End
Indestructible Gasket—No Joints to Leak
CANNOT BLOW OUT
No Threading—No Cutting—No Trouble—Can't Leak—
Can't Split Shanks—Can't Strip Nuts—The Only An-
nealed Supply Pipe That Is Guaranteed For 5 Years
Do away with the antiquated old tub and wash bowl and
let us put you in improved sanitary plumbing worthy of
the times
IF WE DO IT, IT'S DONE RIGHT
208 Main ELDER'S 114 W. 2nd
THE SIGN OF SATISFACTION SINCE 1876

People like to be educated in things they do not understand. This advertisement tells the people what a good supply is.

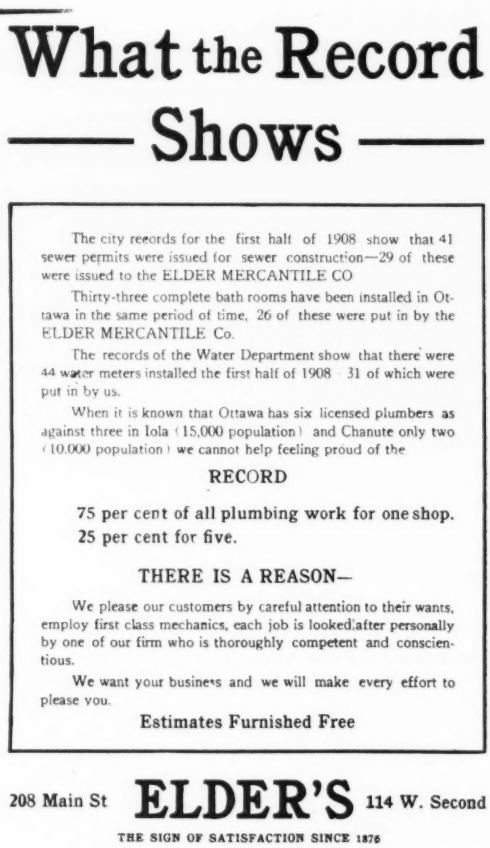
under the head line "Home Convenience," and it is surprising the country business that this brings, and the great number of people who do not know that water can be brought horizontally a distance. When you have illustrated and impressed a reader that the article shown is what he wants, it is rare that he is then exacting about the price to be paid. He feels an obligation for your calling his attention to something he recognizes as needful, and therefore is not going to spend much time in "shopping."

DESCRIBE MERITS OF ARTICLES.

We have found an advantage in clearly showing the merits of the small articles we use such as bibs, stop and waste, bath faucets and supplies. We show cut and tell clearly and briefly why we think they are meritorious. By doing this we find that often on a competition job where we are a few dollars higher, the work will be awarded to us because we have laid the foundation by informing and proving that we are furnishing meritorious articles, even where they are buried in the ground out of sight but still having an important duty to perform.

GOOD ADVERTISING BRINGS RESULTS.

Advertising sometimes seems expensive for the results obtained, but we have positively proved in the past year that good advertising does bring results. Our competition in 1908 was simply fierce, and in starting the year we could not see how we could run our plumbing department with $4.00 a day men against these competitors who believed $1.50 a day was as much as any man was worth and these other shops doing their own work, but the year's results show that by good workmanship, careful effort to please our customers and paying especial attention to finishing and leaving our work in attractive condition, and by modern advertising


What the Record
— Shows —
The city records for the first half of 1908 show that 41 sewer permits were issued for sewer construction—29 of these were issued to the ELDER MERCANTILE CO
Thirty-three complete bath rooms have been installed in Ottawa in the same period of time, 26 of these were put in by the ELDER MERCANTILE Co.
The records of the Water Department show that there were 44 water meters installed the first half of 1908 - 31 of which were put in by us.
When it is known that Ottawa has six licensed plumbers as against three in Iola (15,000 population) and Chanute only two (10,000 population) we cannot help feeling proud of the
RECORD
75 per cent of all plumbing work for one shop.
25 per cent for five.
THERE IS A REASON—
We please our customers by careful attention to their wants, employ first class mechanics, each job is looked after personally by one of our firm who is thoroughly competent and conscientious.
We want your business and we will make every effort to please you.
Estimates Furnished Free
208 Main St ELDER'S 114 W. Second
THE SIGN OF SATISFACTION SINCE 1876

We call this bully good advertising. Truth appeals to people. This article read, its principles mastered, its advice followed, will make you the leader.

methods along the lines indicated above, we increased our business materially and by actual records of the city did 75 per cent of the plumbing business with five competitors in a small city of eight thousand. This certainly is a tribute to the power of the press, backed by earnest and intelligent effort.

Impurities in the Air and Means of Cleansing

By Chas. H. Denison

Man builds unto himself for protection against cold, heat, wind, rain and snow, houses, palaces and huge structures which thrust their heads among the clouds; many times because of ignorance or greed, he neglects to provide the means of ridding himself of ills from which the beasts of the field are comparatively free. In order to sustain the mortal life to which man clings with such desperate tenacity, three things are necessary: *food*, WATER, and AIR. Persons have lived for weeks without solid food, and shipwrecked sailors have survived many days when deprived of fresh water, but no human being—or animal—can exist for more than a few moments, WITHOUT air.

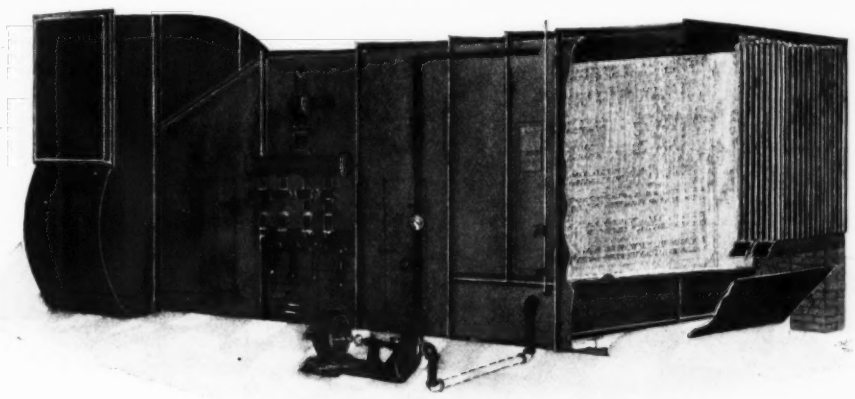


Fig. 1. Air purifying apparatus, consisting of tempering coil, down and up deflectors, washer, eliminator, heating coil, fan and pump. Illustration reproduced by courtesy of the Kauffman Heating & Engineering Company, of St. Louis, Mo.

Air in Cities.

A tremendous problem forcing itself upon people of today is the condition of the atmosphere in large towns and cities, and the lack of clean air, in business and public buildings, schools, manufactories, churches, dwelling houses, mines, steamships, street and railroad cars. A large percentage of the buildings reared by man are so constructed as to become refuges for impurities.

The quality of the air in the cities differs materially from that of smaller towns and country. Aitkin estimated that one cubic inch of air may, in the open country, carry 2,000 dust particles; in cities, 3,000,000 or more, and 30,000,000 IN INHABITED ROOMS.

Origin of Dust.

This dust has its origin in countless processes. It includes particles of animal matter, vegetable substances of every kind, including bacteria and moulds, sea salt, matters swept from the soil by action of the winds, discharges from volcanoes, from manufacturing establishments, from chimneys and from millions of meteorites which fall daily from interplanetary space.

The ordinary combustion of illuminating gas yields millions of particles of carbon for every cubic foot. Dr. Fisher has shown that on the ocean, 120 miles from land, the air is usually free from organisms, and that at a distance of 90 miles it contains but few.

Determining Weight of Dust in Air.

In order to ascertain the weight of the dust contained in a given volume of air, a chloride of calcium tube containing perfectly dry absorbent cotton, or glass wool, is weighed accurately and then attached to a water suction pump with an air meter between. A large amount of air, say 500 liters (a liter=1.056 United States quarts) is then drawn through as quickly as possible, and when a sufficient amount has passed, the tube is detached and placed either in a drying oven or in a diseccator over sulphuric acid, and kept until it ceases to lose weight (moisture). The net increase in weight represents the amount of dust in the volume of air aspirated.

Determining Number of Dust Particles in Air.

To find the number of dust particles in a given volume the method of Aitkin may be employed:

The apparatus includes a shallow metallic box

with glass top and bottom etched in squares. The air in the box has been thoroughly freed from all dust and is kept saturated with moisture by means of wet filter paper.

A small measured amount of air under examination is then introduced. By causing the formation of a partial vacuum each particle of dust becomes coated with condensed moisture and tends to fall upon the etched squares of the bottom of the box,

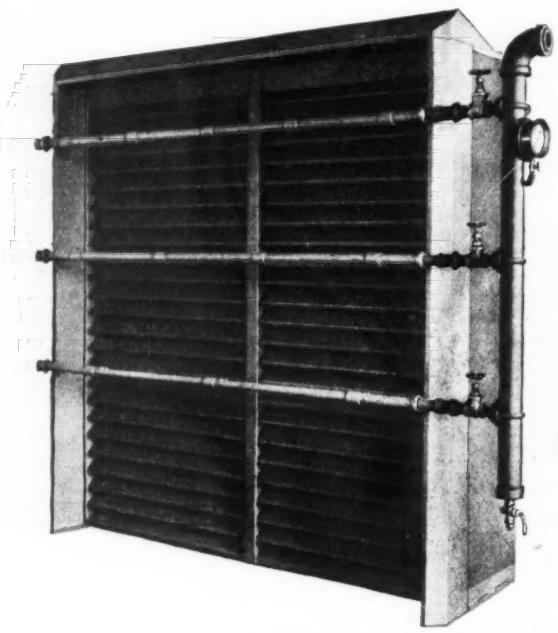


Fig. 2. Showing inlet side of air washer and humidifier. In this device the air is passed through a sheet of spray, after which it enters the eliminator and is divided into numerous diverging currents by the lipped perforations shown. Illustration reproduced by courtesy of the Donaldson Company, of Chicago.

where with the aid of a magnifying glass they may be counted.

What Is Found in Air of Cities.

Examination of the dust deposited on the window ledges of high buildings shows that the dust on the lower ledges is largely composed of sand and the higher up one goes the deposition of animal matter becomes larger, pollen from plants, germs from decomposed animal and vegetable substances, and soot.

At the street level there is found in the air fragments of sand, pollen, fine hairs, ashes, pulverized excreta of various animals, fibers of clothing, particles of lime, plaster and soot, plant seeds, brick dust, steel abrasions from the surface and elevated street car rails and wheels, masses and clusters of many kinds of micro-organisms, etc., etc. M. Miquel, who devoted years of study to the matter, gives the number of microbes in the streets of Paris from 21 to 22 per cubic foot, and in dry and dusty weather the number may rise to 150. *Directly after wind and rain it may fall to an average of 6 per cubic foot.*

Dr. T. Mitchell Prudden found in New York city the number of living germs settling from floating dust upon a round disc 3¾ inches in diameter as follows:

Central Park, at ball ground, 499.

Union Square, at edge of fountain basin, 214.

At Broadway and Thirty-fifth street, 941.

Upon a cross street being swept by employes of the street cleaning department, 5,810.

In the library of a private house near Thirty-fourth and Broadway, 34.

Percy Frankland found at a height of 300 feet on Norwich Cathedral, England, only 7 microbes in two gallons of air; on the gravel near the cathedral, 18; at the top of Primrose hill, 9; at the foot, 24.

Two Classes of Dust.

There are two classes of dust. The visible, as seen every day blown about in the streets, and that which is observed when floating in the beams of light as pictures are thrown on a screen in some church or theater or five-cent picture show.

Risks of Infection.

The risk of infection, out of doors, from dust is not so great as imagined. Indoors the conditions are entirely different. Various impurities are blown in through open doors and windows, carried in upon the garments or soiled shoes, or drawn in through various improper modes of ventilation, and these impurities are being stirred constantly and breathed over and over again, unless some effective means is taken to cleanse the impure air.

It is stated (Dr. T. M. Prudden) that the breath itself, the exhaled air of consumptives, no matter how seriously ill, is not dangerous; it carries no germs. It is only the solid discharged sputum which carries danger, and as this becomes dry it is distributed wherever dust goes, as the dust has been formed in part by the undestroyed germ-laden material expelled from the lungs.

Dust Free from Germs Not Harmful.

Therefore it may be seen that dust, of itself, in houses and public places that are kept in a fairly clean condition, is not harmful but merely annoying, unless it contains living germs of various diseases. This dangerous condition of the air may occur in large cities where dust is allowed to accumulate and where the street cleaning service is limited or inefficient or wrongly carried out, or in the crowded audi-

toriums of large public houses, or in filthy tenement buildings where inefficient means are taken to prevent its entrance.

Dust Must be Kept from Entrance.

In a report written by J. S. Billings, S. Weir Mitchell and D. H. Bergey and published by the Smithsonian Institution of Washington, D. C., it was found that the air in an inhabited room is contaminated from other sources than the occupants and the most important of these are in the form of minute particles or dusts. Also that various experiments made it improbable that there is any peculiar volatile poisonous matter in the air exhaled by healthy men and animals, other than carbonic acid. The results of the investigation showed that the problem of securing comfort and health in inhabited rooms requires the consideration of the best methods of preventing or disposing of dust of various kinds, of properly regulating temperature and moisture and of preventing the entrance of poisonous gases like carbonic oxide derived from heating and lighting apparatus; rather than upon simply diluting the air to a certain standard of proportion of carbonic acid present.

Sickness and Death Rate and Ventilation.

Several years ago the clerks in the United States Pension Bureau were obliged to work in poorly ventilated buildings in different parts of the city of Washington. The average aggregate absence on sick leave was between eighteen and nineteen thousand days a year. Some time later a very much larger force of clerks was housed in a well ventilated building, and the average sick leave absence for a corresponding period amounted to only about ten thousand days. Prof. S. H. Woodbridge of the Massachusetts Institute of Technology shows that the death rates have been reduced by the introduction of efficient ventilating in prisons from 80% to 8%, and in general hospitals from 23% to 6%.

Soot and the Smoke Evil.

One has but to examine the surface of the snow in the streets of any city of considerable size, a few hours after a storm, to be convinced that soot is ever present in the air to a much larger degree than is usually suspected.

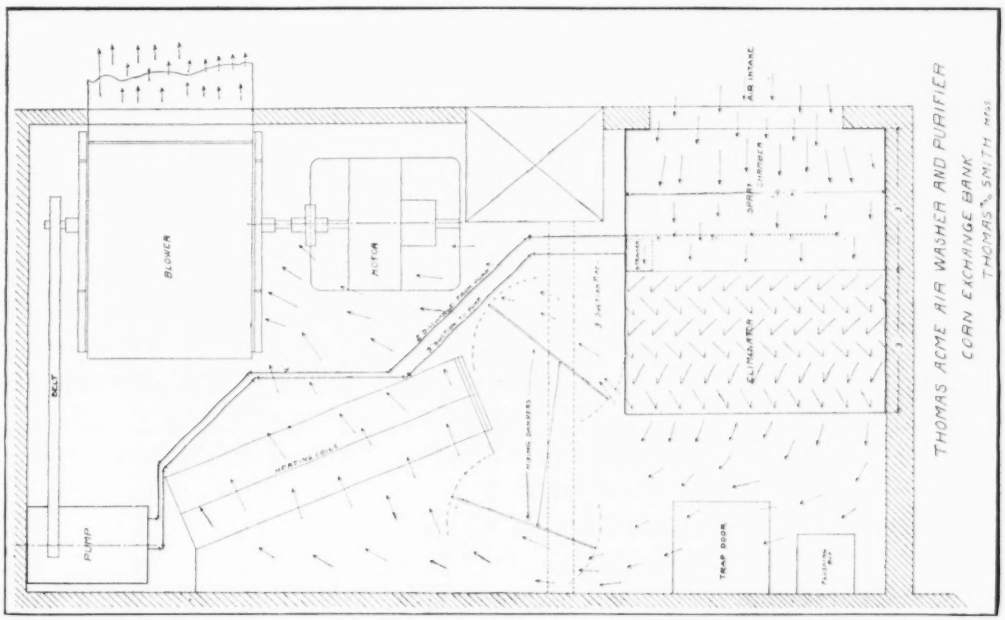


Fig. 3. Shows various portions of another design of air washer and purifier, such as blower, motor, pump, heating coils, spray chamber and eliminator. Illustration reproduced by courtesy of Thomas & Smith, of Chicago.

In the larger cities the smoke problem has become a question of first importance, and various means are being taken to eliminate, or at least partially to abate this nuisance. Smoke, according to John M. Graham , is found to consist not only of soot, but also of silicates and other mineral ash. Also hydrochloric and sulphurous acids and tarry oils which give hurtful character to the dirt deposited.

Sir William Thiselton Dyer's ' figures give as the solid deposit at Kew, England, nearly two tons per acre per annum. This soot is in the air being

breathed for a large part of the day and settles upon buildings, railings, leaves of plants, sidewalks, garments, etc.

The walls of the lungs of adults, living in cities having much smoke in the atmosphere, are dotted all over with spots, streaks and patches of dust which have been inhaled, and are stored away in the tissues in such a manner as will least interfere with the action of the lungs.

Humidity.

Humidity may be divided into two classes, absolute and relative. When one reads "relative humidity 80," it means that at the observed temperature the air holds but 80 per cent of the amount which it can take up, and this degree of approach to saturation at any given temperature is called "relative humidity."

"Absolute humidity" is the actual weight of moisture in a given quantity of air. An amount of watery vapor approaching saturation gives rise to discomfort whether the temperature be high or low. The "sticky" days of summer and the raw days of winter are disagreeable because of their high relative humidity.

In a hot saturated atmosphere transpiration can proceed, but evaporation cannot, and hence the cooling influence of evaporation is missing. The sweat remains on the skin in a liquid form instead of passing into the air as vapor, and so the word "sticky" becomes singularly appropriate.

Carbonic Acid Gas in Air.

All air contains carbonic dioxide or carbonic acid gas as a constant constituent. The normal average amount in impure air is but slightly in excess of 3 parts in 10,000 or about .03 per cent. As little as 1.72 has been observed on mountains.

Early writers on ventilation regarded this gas as poisonous. If the carbonic acid gas in the air be 10 or even 50 parts in 10,000 the proportion is yet far below that existing in the lungs, and any poisonous effect from the gas must occur from within the body rather than from without.

Air Required per Individual per Hour.

The average individual requires, when in an en-

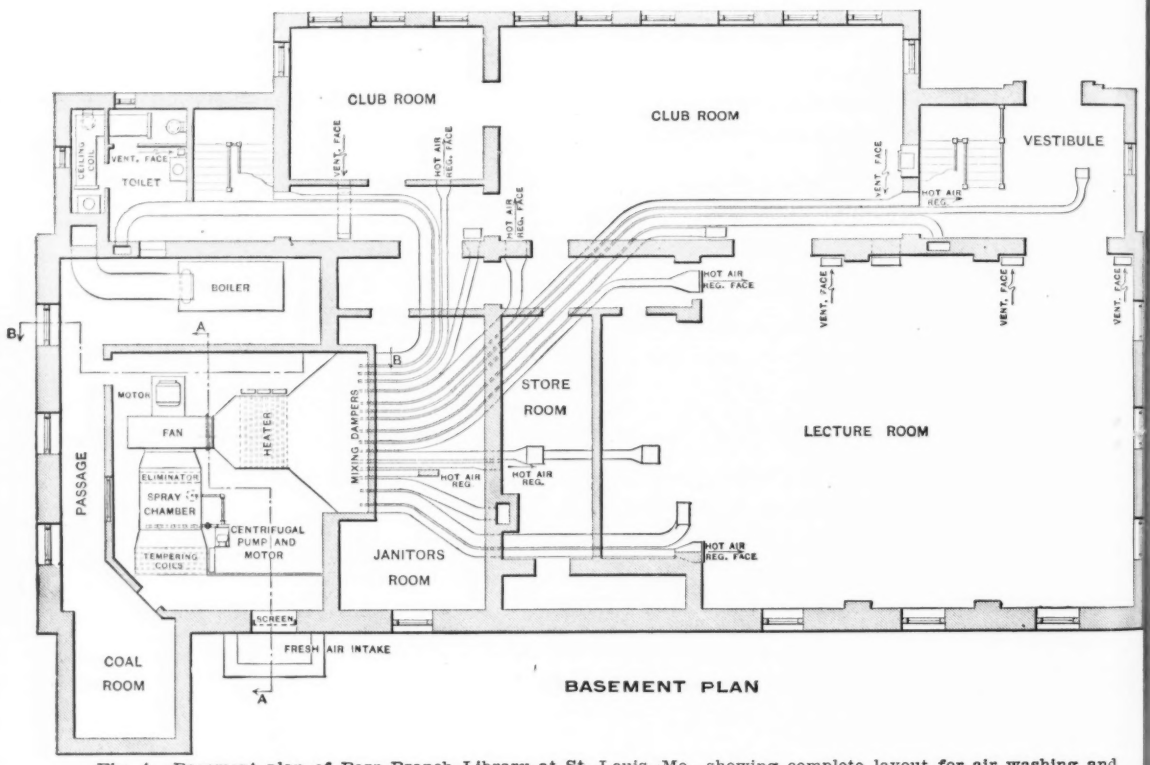


Fig. 4. Basement plan of Barr Branch Library at St. Louis, Mo., showing complete layout for air washing and heating system, with location of heater, eliminator, spray chamber, tempering coils, pump, etc. Illustration reproduced by courtesy of the Buffalo Forge Company, of Buffalo.

closed room, from 1,800 to 2,400 cubic feet of pure air per hour. Failure to supply this in a properly cleansed and tempered condition reduces the working capacity of that individual.

Dr. Billings (*c*) gives the hourly supply as follows:

	Cu. ft. per hour.
Hospitals.....per bed,	3,600
Legislative assembly halls.....per seat,	3,600
Workshops and bedrooms and barracks .....per person,	3,600
Schools and churches..... "	2,400
Theaters and ordinary halls..... "	2,000
Offices and dining rooms..... "	1,800

cases air is brought in contact with fine sprays of water from specially designed nozzles. The natural inventiveness of the American of these days has made it possible to so heat and temper and purify air in rooms that it will be as balmy and refreshing as is the atmosphere directly after a shower in May, and this result may be obtained without regard to weather conditions outside.

Dust Removal Necessary.

From the statements made in various parts of this article it can readily be seen that, no matter whether the air is introduced into the building by blowers or fans, it is necessary to provide some means of removing the dust it contains and of delivering air in

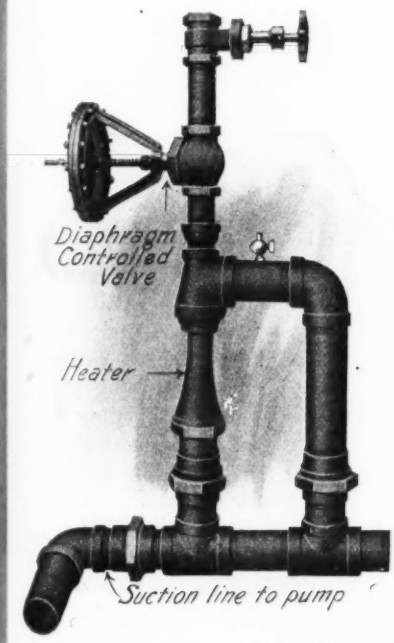


Fig. 5.. Showing water heater for air washer and humidifier for the cold season. It is built on the ejector principle and designed to operate noiselessly and automatically. Illustration shown by courtesy of the Carrier Air Conditioning Company of America, New York City.

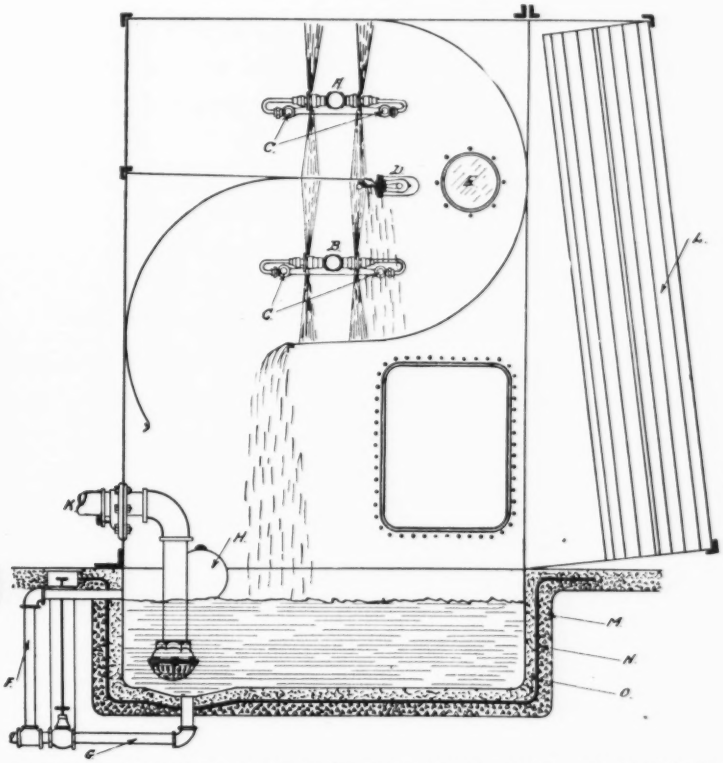


Fig. 6. Diagram of another device for cleansing, cooling and humidifying the air. This sketch is reproduced through courtesy of the McCreery Engineering Company, Detroit, Mich.

Methods of Dust Removal.

The removal of dust is attempted by stretching cheese cloth on frames across the passages or flues which conduct air into the building. This crude method does not provide for adding to or removing from the quantity of moisture in the air, and the cloth soon becomes clogged with impurities.

Air has been washed by causing it to pass through a coke filter over which water trickles. In other the purest form. In order to accomplish this result by means of apparatus certain information is necessary.

Information Necessary to Solve Dust Removal.

The amount of air used and the velocity with which it enters the building should be ascertained. The size of the intake and of the fan inlet. Also the size of the fan wheel and fan discharge.

The size and height of the room to contain the

apparatus, and the position of the fan, heater and tempering coil, and whether or not the water is to be wasted or used repeatedly, and if the system will be used for cooling during hot weather.

METHODS OF AIR WASHING NOW AVAILABLE.

The various means used to remove impurities from the air consist, in general (with various modifications or changes peculiar to each particular system) of tempering coils, washers, eliminators, heating coils, fans and pumps, placed generally in the basements of buildings. These used in proper mechanical relation to each other, produce the desired result and deliver pure and wholesome air at the desired points in any building.

The air to be washed and humidified may be drawn or forced into a large chamber (generally built of copper or galvanized iron) and is here brought in contact with finely divided sprays which completely fill the chamber. As the air leaves this chamber it passes an eliminator which removes the free moisture containing dirt. In some systems to prevent freezing, the water during the winter is heated by different devices, and in others the air is heated by a heating coil.

Figure 1 is a perspective of a typical fan installation with the Kinealy air purifying apparatus and shows the washer, tempering coil, eliminator, heating coil, fan and pump.

Figure 2 gives a view of the Eclipse air washer and humidifier. In general an eliminator consists of a number of down and up deflectors, slightly inclined to the horizontal, by which the air is alternately deflected downward and upward as it passes through the apparatus.

Figure 3 gives the plan of the complete installation of the Thomas Acme air purifying system, consisting of motor, pump, blower, heating coils, eliminator spray chamber, etc., as installed in the Corn Exchange Bank.

In figure 4 is given the basement plan of the Barr Branch library, St. Louis, Mo., an installation of the Buffalo fan system.

Figure 5 shows the water heater used by the Carrier Air Conditioning Company.

Figure 6 shows the practice of the McCreery Engineering Company for removing impurities, and its method of humidifying the air.

Generally speaking a complete purifier consists of two parts, a washer and an eliminator.

At the bottom of the washer or spray chamber is a sump (or tank) into which the water falls and carries the dirt taken from the air, and from which the water is drawn by means of a centrifugal pump of suitable size and forced into the pipe leading to the spray heads. The lighter particles of dirt are caught by the fine drops of water and some of these fall into the tank, or sump, while heavier particles are carried to the eliminator and there the moisture in the air is taken out by the rubbing action on the surfaces of the deflectors and by the sudden changing of the direction of the air from downward to upward brought about by the deflectors.

The sprays wash and humidify the air, which passes through the eliminators, where all the free or unabsorbed moisture and solid matter is removed. It then passes to the fan and tempering or heating coils to be heated sufficiently to maintain the required temperature in the building.

The heating engineer of the twentieth century is confronted by many intricate problems arising day by day and should prepare himself to meet the various conditions arising by becoming acquainted with the methods of removing dust from the air and the great necessity for bringing about this result.

Pure Air in the Factory

Practically all classes of manufacturing necessitate special ventilating equipment of one kind or another. Dust and fumes, room temperature and degree of humidity, each requires treatment. Sawdust collectors are necessary in a woodworking plant; the fumes from the tanks in an electroplating shop must be carried away, the relative amounts of moisture in the air cut a considerable figure in textile mills.

This equipment does more than pay profits in the good health of employes. Orderliness in a plant is directly reflected in workmanship. Artisans and clerks accomplish more in the morning, not merely because muscles and mind are rested, but because the air is fresh. To get the highest efficiency all day, therefore, make conditions throughout as near those of the morning as possible. This is the problem that has been effectively solved by the biggest dye house in England.

In this business fumes are especially troublesome, requiring various types of collecting hoods to free the air. The methods employed in ventilating are very effective. The main suction ventilating system is supplemented by detailed equipment to fit the conditions in different departments.

In the washing room (see page XXV) the tanks are completely enclosed and fitted with a large suction pipe, so that when the cover is closed the disagreeable odors are drawn out. So strong is the

draft from the fan, moreover, that when the tank is opened, little gas escapes into the air.

Horn Shaped Ventilators Draw Out Air.

For washing some garments preparatory to dyeing, the tanks illustrated in figure 2 are more convenient. In this case the ventilation has been provided for by wide flaring horns set over the tanks. Any fumes which may escape these two methods of ventilation are removed by a big electric fan set in the wall and which exhausts directly from the room.

Some Little Heating Points.

Similarly to increase efficiency in production, complete ventilating and heating systems are in use in various mills of all classes of manufacturing. From

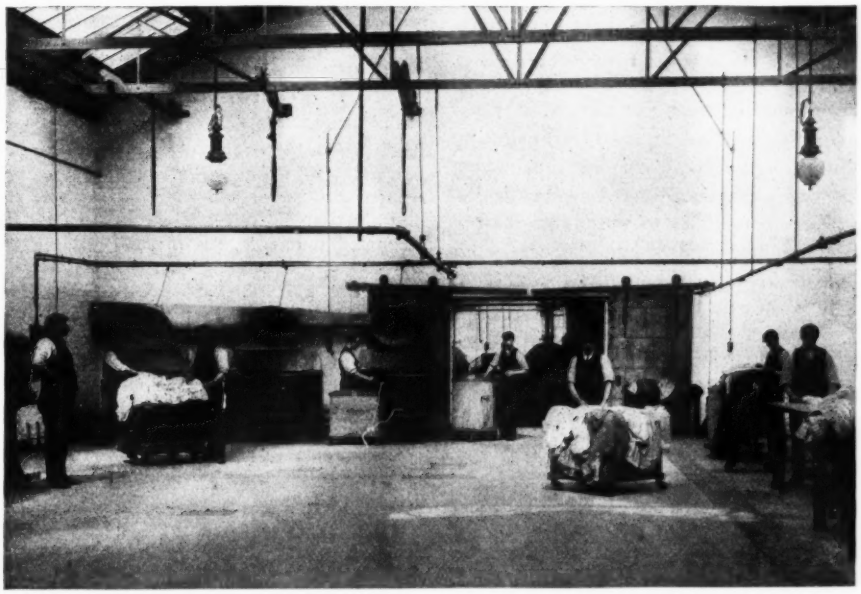


Fig. 2. Washroom in the Johnson dyeing plant, Liverpool, England, where, in order to keep the air in the room absolutely free from impurities, suction pipes have been installed above the washing vats to carry away fumes and odors. Plate reproduced through the courtesy of "System." See page xxv.

many of them may be gained little points in heating and ventilating which add much to the general efficiency of the main system.

The manager of one wood working plant has combined with his suction dust-removing system, a compressed air equipment for cleaning the machinery. An air pump in the boiler room—of a type similar to the air compressor used on a locomotive—supplies air under pressure. This supply of compressed air is piped to various points in the building. An air cock and a length of flexible hose at these points make it easy to blow dust out of corners.

At night the engineer starts the pump and the dust is blown out of the motor armatures and the machines. While this scheme is very effective, the vacuum system would be more nearly ideal from the standpoint of ventilation. In a large office a suction pump is placed in the basement and its reservoir is piped to the different floors. By means of a flexible connection the desks and floors are quickly sucked clean of dust.

Another woodworker has piped ducts from the main dust collecting system to the floor, where the conductors end, and with wide flaring mouths. Sweepings are quickly carried away by bringing them up to this automatic dust-pan and opening the damper in the pipe.

Forced Ventilation.

In machine shops and similar iron working establishments ventilation is less difficult. In many such factory buildings the supply of fresh air is considered in connection with heating. By forcing steam heated clean air into the building by a fan through galvanized iron ducts good results are obtained.

Under ordinary circumstances a fan would have to be located in each building because of the loss of heat by radiation along a great length of pipe. In one specialty shop, however, to save space the hot air piping is carried entirely out of doors* and the

*This is only to be recommended in moderate climates.—Ed.

system distributes heat successfully to all the buildings. The hot air conducting pipes are run in boxes filled with sawdust. The loss of temperature in passing through this piping is only about five per cent by actual test. Moreover, the exhaust steam is used for heating the air at the power house and the plant is central and easily managed.

AN EFFECTIVE FAN SYSTEM FOR VENTILATING A FACTORY.

A similar fan system proved successful in a cotton mill. In this factory, the main building is three stories high and the heating equipment is placed in a one-story structure located centrally on one side of the length of the building. Four big conducting flues, built of brick with a bricked-in air space surrounding them to prevent loss of heat, are carried up the outside of the building. From these flues registers open into the different floors near the ceiling.

The air, heated by steam, is driven into the rooms by a large motor-operated fan. The amount of moisture in this steam-heated fresh air is adjusted by passing the air through a spray chamber into which the amount of water can be adjusted automatically. The temperature and humidity of the air in the mill are thus under complete control and the best work can be done irrespective of outside atmospheric conditions either in winter or summer.—M. A. Rogers, in "System."

STEAM-HEATING GARDEN SOIL.

The gardeners of Paris get their products on the market weeks before the regular season for them. This forcing of nature is described by Ernest Poole in Success Magazine.

The secret is simply this: The French maraichers have manufactured a climate to suit them. As one observer has said, "They have moved the climate of Monte Carlo up to the suburbs of Paris."

Some new prodigy of modern science, this? Not at all. Only enormous expense in money and time. The gardens, whenever possible, are placed on land with a slope to the south, and are well protected by walls on the north and east, walls built to reflect light as well as to give protection from the northeast winds.

The ground is practically covered with glass, not as in a greenhouse, but by glass frames in the open, "three-light" frames of uniform size, 12x4½ feet, and also by glass bells. These, too, are of a uniform size, about the shape of a chapel bell, a little less than seventeen inches in diameter and from fourteen to fifteen inches high. The French call them cloches. You may often see 1,000 frames and over 10,000 glass bells in one two-acre plot in the suburbs of Paris.

A more recent innovation is the employment of hot-water pipes run under the soil, making of the earth a veritable steam-heated hotel, with this essential difference, that the hotelkeeper here is desperately eager, not to keep his guests, but to persuade them to leave on the earliest possible day.

AN ORDINANCE EVERY CITY SHOULD PUT IN FORCE

It Authorizes the Health Department to require Plumbing and Drainage to be installed if Water Supply and Sewers are available

It solves the unspeakable privy vault nuisance by permitting the substitution of sanitary plumbing

THE NECESSITY OF EVERY CITY OR TOWN HAVING A DRAINAGE ACT.

The Health Department of every city or town should **have power to require every building used for human habitation or work, or for stabling animals, to be connected with sewer and water when same are available,** and not permit owners to wait until they feel disposed to install plumbing, for in such cases it would sometimes never be done. Such a law is necessary where privies or cesspools are maintained and water from wells used. A law giving this power to the Health Office should be one of the first steps taken by the authorities after a public sewer and water system is ready for use. Well pollution from leaking privies is disgustingly common. Nor is it a pleasing sight to see chickens filling their crops from this filth; nor see flies crawling over this mass and know that later they will crawl over the food at the table, coming through unscreened windows.

There is certainly a great need of awakening our sleeping country cousins to the necessity of better sanitation. As well should we arouse thoughtless city property owners, who neither heed the requests of their tenants for sanitary plumbing nor have the proper spirit of advancement of the public health and comfort of their fellow residents.

Therefore I reiterate **a drainage act is a public necessity.**

Believing there are many who are interested in such a law, I herewith submit the Act of Congress on this subject approved May 19, 1896, and now in force in the District of Columbia:

Washington's Drainage Act.

An act to provide for the drainage of lots in the District of Columbia. (29 Stat. 125.)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That each original lot or subdivisional lot situated on any street in the District of Columbia where there is a public sewer shall be connected with said sewer in such manner that any and all of the drainage of such lot, whether water or liquid refuse of any kind, except human urine and fecal matter, shall flow into said sewer; and if such original lot or subdivisional lot is situated on any street in said District where there is a public sewer and water main, such original lot or subdivisional lot shall be connected with said sewer and also with said water main in such manner that any and all of the drainage of

such lot, whether water or liquid refuse of any kind, shall flow into said sewer: Provided, That the connections required to be made by this act shall be made under the following conditions: When there is on any such original lot or subdivisional lot aforesaid any building used or intended to be used as a dwelling, or in which persons are employed or intended to be employed in any manufacture, trade, or business, or any stable, shed, pen, or place where cows, horses, mules, or other animals are kept, then, and in that instance, such original lot or subdivisional lot shall be connected with a public sewer and water main or with a public sewer, as may be required with this act; and whenever there is no such building, stable, shed, pen, or place, as aforesaid, on such original lot or subdivisional lot, then such lot shall be required to be connected with a public sewer only when it has been certified by the health officer of said District that such connection is necessary to public health.

Sec. 2. That it shall be the duty of the Commissioners of said District to notify the owner or owners of every lot required by this act to be connected with a public sewer or water main, as the case may be, to so connect such lot, the work to be done in accordance with the regulations governing plumbing and house drainage in said District.

Sec. 3. That if the owner or owners of any such lot neglect or refuse to make such connections as are required by this act within thirty days after the receipt of such notice, such owner or owners shall be deemed guilty of a misdemeanor, and shall, on conviction in the police court of said District, be punished by a fine of not less than one dollar nor more than five dollars for each day he, she, or they fail or neglect to make such connections.

Sec. 4. That in case the owner or owners of any such lot be a nonresident or nonresidents of the District of Columbia, or can not be found therein, then, and in that case, the said Commissioners shall give notice, by publication twice a week for two weeks in some daily newspaper published in the city of Washington, to such owner, directing the connection of such lot with such public sewer or with such public sewer and water main, as the case may be: Provided, however, That if the residence or place of abode of the said nonresident lot owner be known or can be ascertained on reasonable inquiry, then, and in that case, a copy of the aforesaid notice shall be mailed to said nonresident, addressed to him in his proper name at his said place of residence or abode, with legal postage prepaid; and in case such owner or owners shall fail or neglect to comply with the notice aforesaid within thirty days it shall be the duty of said Commissioners to cause such connection to be made, the expense to be paid out of the emergency fund; such expense, with necessary expense of advertisement, shall be assessed as a tax against such lot, which tax shall be carried on the regular tax roll of the District of Columbia, and shall be collected in the manner provided for the collection of other taxes.

Approved, May 19, 1896.

Its Operation.

The Health Office serves orders on owners under this law, and has required thousands of lots and premises to be connected to the public sewer and water when the same are laid on by the engineer department. This procedure is going on all the time, as fast as the sewer and water systems are extended into the suburbs.

How Evasion Is Attempted.

In this city, as well as all other cities, there are schemers who resort to practices to evade the law, as well as a great number of non-residents who evidently have their agents well coached in regard to not giving the authorities their address, and in a number of cases it is difficult to serve notices on them. Section 4 of this act was thought to cover the service of the notice and acted well until the year 1906, when an attorney for a non-resident owner carried a case to the Supreme Court of the District. It was decided that the Commissioners attempted to make a distinction between the method of serving a notice and having work performed on a resident and non-resident owner, and for that reason this section of this act was declared unconstitutional. As this was an important decision against the District of Columbia law and affected so many cases of property owned by non-residents, it became necessary for the Commissioners to submit to Congress a bill known as the "Nuisance Act," which was approved April 14, 1906. Since then in serving the notices, the offenders are charged with violating the first three sections of the "Drainage Act" and the sections of the "Nuisance Act," and all regulations of the building, health office and plumbing department, which are violated.

How the Law Is Enforced.

The procedure for carrying out the law is for the health office to serve an initial notice of thirty days on either resident or non-resident owners, and if the work required is not done, to forward the papers in the case to the plumbing office, where plans and specifications are prepared, bids requested from half a dozen or more plumbers, and if the work is not started after the receipt of the bids, they are forwarded to the Commissioners, with a **recommendation that the lowest responsible bidder be given the work.**

There is a stipulating clause in the order to the plumber, that "should the owner proceed with the work before the contractor, the Commissioners reserve the right to cancel the order given the contractor to do the work." **The work,** if started by the plumber, **is done under the supervision of the plumbing office,** and includes the laying of house drains and water service, and connecting up yard water closets, yard drains, downspouts and stable, if one exists, and supplying water to closet and hydrant, building yard closet enclosure, providing gutters and downspouts and connecting them to the terminals, and doing any necessary grading in the yard "so that any and all drainage of the lot will flow into the yard drain and sewer."

After the work is done, the contractor is paid from a specific appropriation made each year by Congress, usually $5,000, one-half of which is allotted by the Commissioners to the plumbing office for all such cases.

Collecting the Cost.

After the work is completed, all the papers in the case including the cost of preparing the plans and specifications, advertising, and all incidental expenses, are then forwarded to the Board of Assessors, who prepare the bill of assessment, and if the tax is not paid by the owner at the proper time, the property is sold at the annual tax real estate sale. The purchasers pay only the cost of doing the work as mentioned above, together with all taxes which are in arrears, and such sale does not represent what the property would bring at public auction, but is held simply to reimburse the District of Columbia for taxes and expense of connecting to the public sewer, and the owner can again obtain the property by reimbursing the purchaser, who is allowed by law to charge 8 per cent. interest.

Statistics of the Law's Operation.

During the last fiscal year, ending June 30, 1908, the health office served drainage notices upon 349 owners who installed plumbing as required by the plumbing regulations, and for that same period I submit a portion of my report as plumbing inspector, showing the disposition of cases which were furnished to this office:

"At the beginning of the fiscal year, July 1, 1907, (ending June 30, 1908,) there were thirty-six cases on hand and a total of eighty-two cases were received during the year, making a total of 118 premises which were disposed of as follows:

Work done by owners	46
Buildings torn down	16
Returned to health office	8
With the board for the condemnation of unsanitary buildings	10
Actions pending	8
Received too late for action this year	14

"There were sixteen cases where houses were connected to sewer and water by this office under contract, at a cost of $2,434.75, leaving a balance of the aliotment of $65.25.

"I call attention to the large proportion of cases where work was done by the owners after papers were referred to this office for action. This was directly due to the particular attention paid to this part of the work and was the result of many conferences with owners and agents."

The "Nuisance Act" and its workings will be described in a forthcoming issue of this paper.

H. B. Davis.

Washington, D. C.

Careful Attention to Factory Sanitation

By James S. Cassedy

The Ashton Valve Company, of Boston, has recently had plans made for the construction of a new factory building and the provisions made for the comfort and sanitation of the working force are so good that I want you to know about them. The new building is located at East Cambridge, Mass., and the building will consist of a basement and three floors, the main floor being 200 feet by 50 feet, with an addition at the rear 77 feet by 100 feet. The engineers are Densmore & LeClear, 15 Exchange street, Boston, through whose courtesy I am permitted to send to you the plans showing the toilet conveniences provided for this modern factory. Figure 1 shows the men's wash room and toilet room in the basement. I may say that the basement is occupied by the blacksmiths' shop, the pattern storage, engine room, pump room, boiler house and foundry. Outside of the curb line is an 8-inch tile pipe to the main sewer, and at a point within five feet of the building line this connects with the main drain, which is of 8-inch iron, and just within the building, in a manhole with a cast iron cover, is a running trap into which there is led a 6-inch soil pipe, a 4-inch rain conductor pipe and a 6-inch rain conductor pipe. The main drain is laid in a trench 18 inches deep by 36 inches wide, which is reduced to 12 inches by 14 inches, giving complete access to the main drain along two sides of the toilet room. In the men's toilet room there are four individual closets and three urinals which are supplied by a 1-inch cold water pipe, and which waste to a 4-inch soil pipe ending with a cleanout with opening covered by a brass plate. In the wash room are wash sinks supplied with 1-inch cold water and 1-inch hot water, and around two sides of the room are lockers.

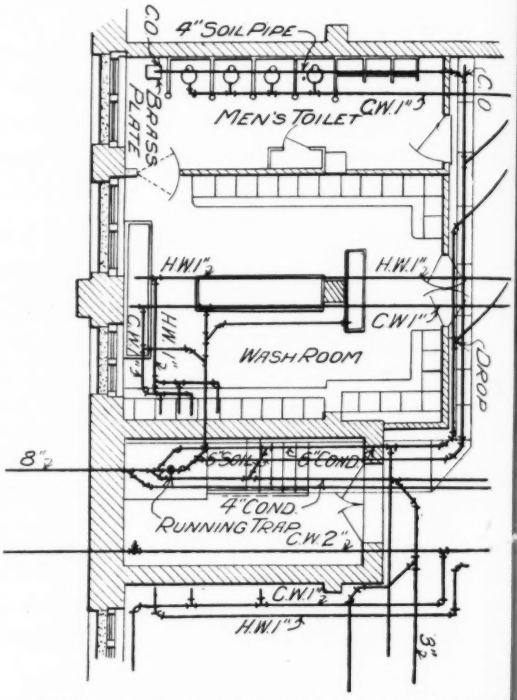


Figure 1. Men's toilet and washroom in the new factory of the Ashton Valve Company, at East Cambridge, Mass. Note locker arrangements in the washroom; and manhole containing main trap, receiving conductor pipes and main house drain; main drain is in an accessible trench.

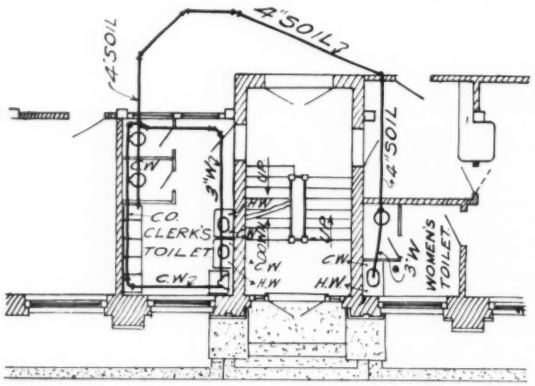


Figure 2. Toilet room for clerks and women, located on the main floor in the new factory of the Ashton Valve Company, at East Cambridge, Mass.

On the first floor, directly above the wash room shown in figure 1, is the clerks' toilet, shown in figure 2, which contains two lavatories, a urinal and two closets. The urinal and lavatories waste by a 3-inch pipe which connects into a 4-inch soil pipe which takes the waste from the two closets, this 4-inch soil leading around to the opposite side of the main stairway where it receives a 4-inch soil pipe from the women's toilet off the main office, which contains a lavatory and

clo-et. The first floor of the building is given up to the carpenter shop, pattern shop, stock room and tool room. On this floor there is also a toilet room for workmen which contains three closets and three urinals wasting into a 4-inch soil pipe. There is adjoining this a wash room with a wash sink supplied by 1-inch hot

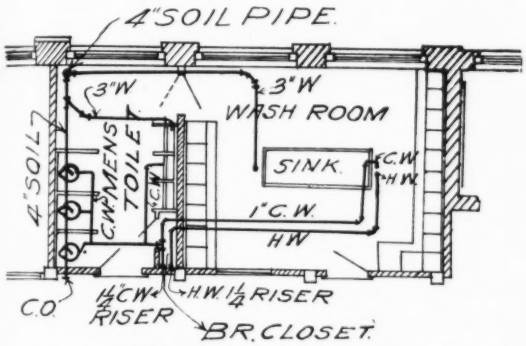


Figure 3. Workmen's toilet and washroom on main floor of new factory building for the Ashton Valve Company, East Cambridge, Mass. Note that risers are carried to floors above in a brick shaft; wash sinks supplied with cold and hot water; lockers on two sides of the washroom.

water and 1-inch cold water, with a 3-inch waste running to the 4-inch soil pipe from the toilet room. There are also lockers for the workmen on two sides of this room. The riser for cold water is 1¼ inches and for hot water 1¼ inches, and is brought up to this floor and to the floor above through a shaft with brick walls. On the second floor, which is given up to machine work, is a toilet room, shown in figure 4, containing five water closets

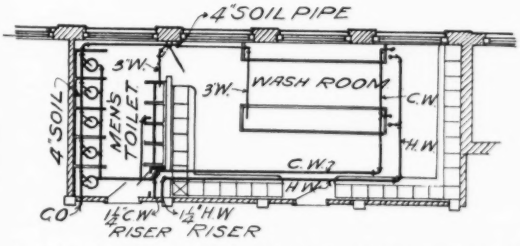


Figure 4. Workmen's toilet and washroom on second floor of new factory building for the Ashton Valve Company, East Cambridge, Mass.; note two wash sinks, each fourteen feet long, supplied with hot and cold water; lockers on three sides of the room.

wasting into a 4-inch soil pipe, four urinals wasting through a 3-inch pipe, and adjoining this room is a wash room with two wash sinks, each 14 feet long, supplied with hot and cold water, with lockers on three sides of the room.

A Dreadful Dilemma.

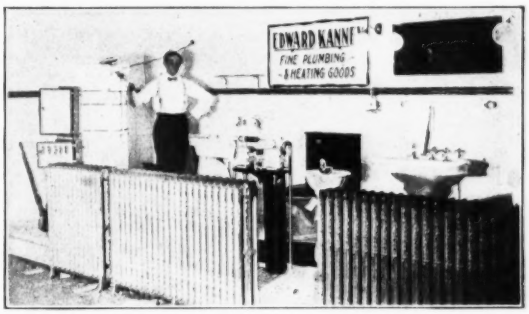
Guest—"Won't you ask young Squalls to recite?"

Hostess—"But I don't like recitations."

Guest—"Neither do I. But if the young beggar doesn't recite he'll sing."—Illustrated Bits.

Exhibiting Plumbing and Heating Goods

Some time since we published the experience of Edward Kanney, a very enterprising plumber, steam and hot water fitter of LaPorte, Ind., in which he highly recommended making exhibits of plumbing and heating goods at local fairs. We take pleasure in publishing a picture of a recent exhibit of plumbing and heating goods made by Mr. Kanney. The general scheme of the booth was white with gold trimmings. The lower part of the booth was trimmed in pressed steel simulating tiling; a heating boiler was painted white and was lighted inside by electricity showing every detail of the interior construction. Radiators decorated with gold bronze formed a railing in front of the booth. The bubbling fountain in the center of the booth was supplied by a drive well,



Attractive plumbing and heating exhibit recently made at a local fair by Edward Kanney, of La Porte, Ind.

the water being pumped by a small pump on a platform at the left of the fountain. Moving fixtures always attract attention. At the right of the booth, not shown, was a bath and nickel plated shower, both supplied with running water. Mr. Kanney's display attracted the attention of thousands of people from all parts of his county and took five first prizes. Mr. Kanney says "I believe that this is one of the best ways for a local steam and hot water fitter and plumber to advertise, as it brings his goods before people in such a way that they can see them working and know exactly what they will be getting."

Mercury Vapor Lamp Is Bright.

A combined carbon filament and mercury vapor lamp is being introduced in Germany. The filament is inclosed in a U shaped tube, in which is a drop of mercury. The air in the tube is exhausted, and in its place an inert gas is introduced, to permit the conduction of heat from the filament to the mercury. The U shaped tube is inclosed in a bulb similar to the ordinary incandescent electric lamp bulb, says the Philadelphia Record. When the current is turned on, the carbon filament is immediately rendered incandescent, and the mercury gradually vaporizes, increasing the light intensity to more than double the value of that of the filament. The lamp consumes from 1.5 to 1.6 watts per candle power, and its life is from 600 to 1,000 hours. The light it yields is perfectly white.

In Early Days—XIX

By Herbert S. Renton

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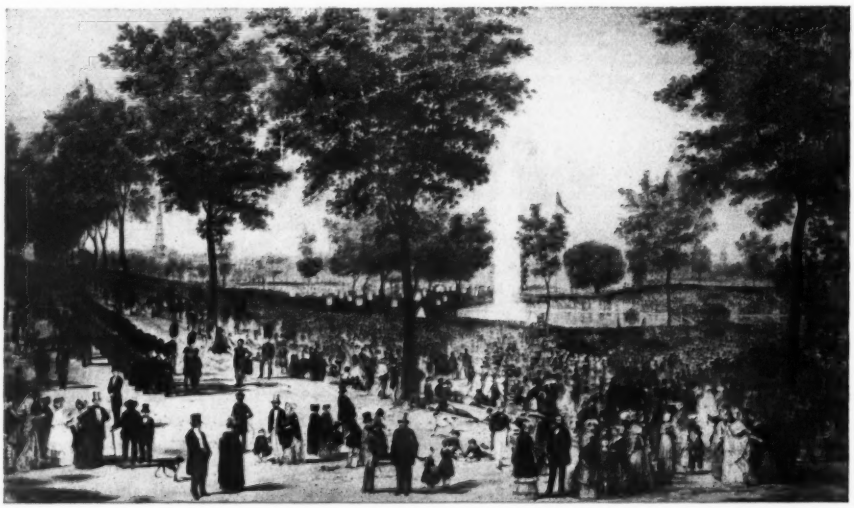
Pioneers in Boston

Water was introduced into Boston October 25, 1848, six years after the opening of the aqueduct in New York, and ten years before the Ridgewood water came to Brooklyn. About the time of the birth of the Boston waterworks Hooper & Co. operated the largest brass works in New England and among other things made the bell which hung in the New York City Hall tower in the fifties. I have often heard my father tell of the eccentricities of Deacon Richardson, the superintendent—and the firm of Hooper & Co. was celebrated in its day—but I have recently questioned several old Bostonians, not one of whom ever heard of this pioneer shop. My father learned his trade with Hooper & Co. in the late forties—and when the bell for the New York City Hall was cast in Boston he saved it by throwing several shovelfuls of sand on a break in the mold where the liquid metal burst through, and **standing on it,** while all the other workmen ran for their lives, he prevented the threatened explosion, and the casting was saved. Whenever I hear the expression, **"He had sand,"** I have a vivid picture of this exciting scene in that old-time gloomy foundry when timely thought and **sand—supplemented by personal weight—saved the day.**

All concerned have disappeared from life's stage. "Are we so soon forgot when we are gone?" Joe Jefferson's Rip Van Winkle used to ask, in the village of "Falling Water." Falling water! That reminds me that **Henry C. Weeden,** of Boston, **introduced** to the jobbers of the United States **the idea of a closet flushed by a tank overhead operated with a chain and pull.**

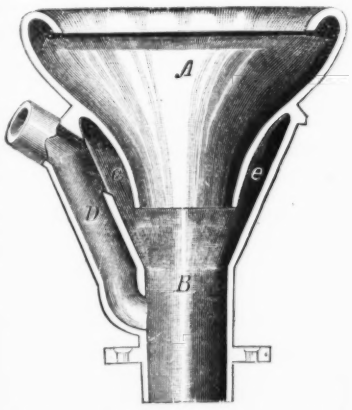
I have the story from Mr. Weeden himself and I give it in his own words. "I was greeted everywhere with the exclamation when I talked the **tank closet,** 'What, a box of water on the wall?' I arrived in Chicago one Saturday morning homesick and discouraged. I called upon and introduced myself to Captain Clow of blessed memory. I never shall forget **him,** for while talking to him he all of a sudden stopped our conversation and said to me: 'Weeden, are you sick?' I told him no, not physically, but discouraged in my efforts to introduce tank closets. He said, 'Never mind, my boy, you come in Monday morning and I will give you an order and in the meantime let's adjourn around the corner,' and he soon, by his genial ways, drove my homesickness and tank discouragements away.

"I remember well calling on **H. T. Lally** who then was doing a large business in Chicago. He listened to my energetic talk and when I had finished **he arose** and taking me by the arm led me into a large cellar packed solid from one end to the other with Zanes Plunger closets. Pointing to them he said: **'Bring me a Plunger closet as good or better than that one** and



Celebration incident to the introduction of Cochituate water into Boston, on October 25, 1848, and the first exhibition play of the fountain in the Frog pond on the Common. Previous to this, with the exception of a few wealthy residents who had water brought in wooden pipes from Jamaica Pond, everybody had to rely upon wells and cesspools which stood, in thousands of cases, within a few feet of each other, with the water so filthy that it in many cases tasted like bitter medicine. Daniel Webster can be seen in the left foreground of the picture, with a dog behind him. (It is said that Daniel always could be relied on to get to the front, and the picture seems to corroborate this statement.) The illustration is reproduced by courtesy of the State Street Trust Company, of Boston.

I will **give you orders for car loads.'** On my return from that trip active opposition had developed even in Providence, R. I., against the **tank of water on the wall**, for **L. H. Tillinghast** had gotten out a Plunger closet called the Providence Positive, and it was sure positive destruction to use one, and he had headed his



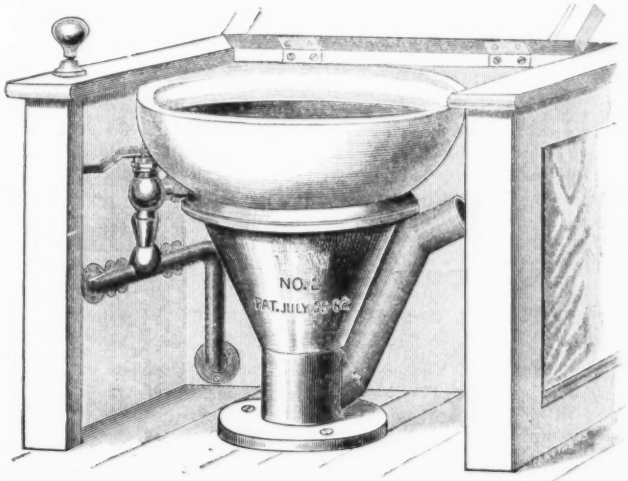
Sectional view of Phillips & Weeden's patent ventilated hopper closet. Reproduced from Phillips & Weeden's 1883 circular.

circulars with these words: 'No Nasty Tanks on the Wall.'"

Besides this **Providence Positive** there was another opposition to Mr. Weeden in the Hartford Glass closet

Phillips & Weeden's No. 3 patent ventilated sanitary hopper with brass and supply couplings. Reproduced from Phillips & Weeden's 1883 circular.

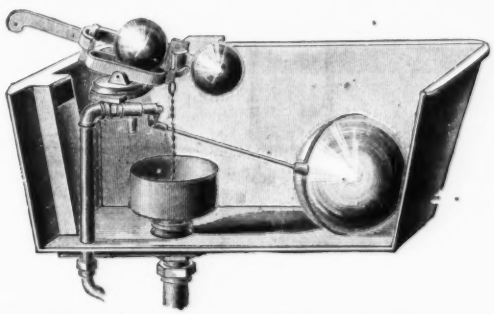
made in Hartford, Conn. It was a Plunger closet with a **finely** constructed valve, with a glass bowl instead of earthenware. Then came the Short Flushing Rim Hopper Closet Bowl fastened by clamps on an earthen, or usually an iron enameled, hopper trap. This had a great run in Boston, the sale of it being made by the Meyer-Sniffen Co., of New York, through their efforts in introducing the Hellyer Short Hopper Closet. After that Boston used **the Washout**—which had been known for years in England as **the "Monkey closet."** Then the Boyle Pneumatic came along. It had only a lim-



Phillips & Weeden's patent ventilated sanitary hopper closet, patented July 25, 1882. Illustration reproduced by courtesy of Henry C. Weeden, of Boston, from the first illustrated circular ever issued to advertise plumbing specialties in Boston, published in the spring of 1883.

ited sale in Boston, but the Siphon idea finally triumphed over everything else.

Phillips & Weeden were the **first jobbers to issue a specialty catalogue in Boston** and the first to show closets on water at the Hub. They had a dozen closets set up along the wall in the front of their store



Sectional view of Phillips & Weeden's patent sure supply tank, patented March 20, 1883. Reproduced from Phillips & Weeden's 1883 circular, previously referred to on this page.

in 1880. They also patented the all earthen P. & W. No. 3 Flushing Rim Hopper, flushed from an iron tank —the Miller Iron Co., of Providence, furnishing the shell. The valve in the tank was **the first Flush valve put on the market.** On top of the valve there was a cup and the levers which pulled the valve were double—one inside the other, but hinged to work sepa-

rately. On the track of the inner lever rolled an iron ball. When the outer lever was pulled it raised the inner lever and the valve. The ball on the inner lever rolling to the other end held the valve up until the water lowered in the tank to the bottom of the valve leaving the cup on top filled with water, which being heavier than the ball it tipped the inside lever back again causing the ball to roll to other end and the water weighted valve closed. This was **great** in its day. (See illustrations.)

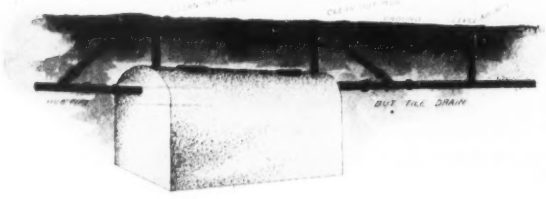
The No. 3 Hopper which was flushed from a tank and the No. 2 Hopper were really the well known **Worcester Hopper and Flush Rim Bowl** with the difference that Phillips & Weeden made it of one piece of earthenware. These were the goods that Mr. Weeden introduced in the West.

Questions and Answers

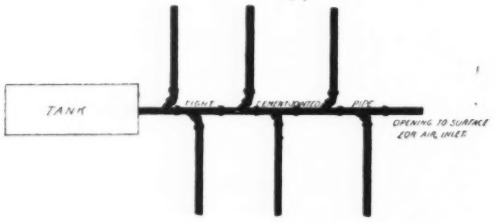
AN ANTI-SEPTIC TANK FOR SEWAGE PURIFICATION.

140. Nordhoff, Calif.—To the Editor of "Domestic Engineering." Sir: Will you please give me an illustration of a good anti-septic tank for the disposal of sewage? **H. A. Johnson.**

Figures 1 and 2 show a method of constructing a septic tank and a system of subsoil irrigation which



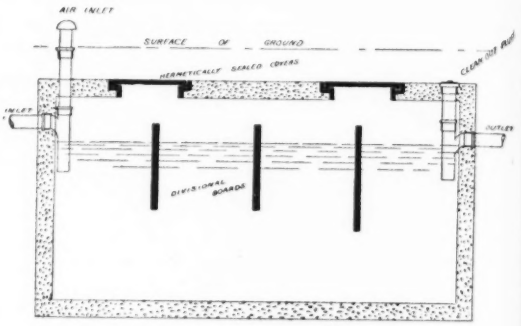
- TANK:- showing detail of connection and filter appliance -



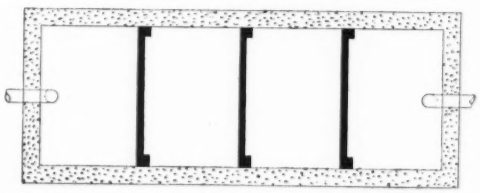
System of drain tile for Sub-soil Irrigation -

Fig. 1. Showing method of constructing a septic tank recommended by Herbert F. Shade, plumbing inspector at Victoria, B. C.

has been used quite extensively in Victoria, B. C., and which is recommended by Herbert F. Shade, plumbing inspector of that city. In figure 1, the by-pass in the sewer, extending over the tank, is to encourage a draft down the openings and through the tile drain, permitting air to come into contact with the sewage. In figure 2 the partitions in the tank are to insure proper septic action with small as well as large quantities of sewage. The size of the septic tank is based upon the daily consumption of water equal to forty gallons per person. The tank is 12x4x6 feet in dimensions and the first compartment is capable of treating the sewage of ten persons, and when this amount is exceeded the sewage is passed under the first divisional board to the next compartment. Mr. Shade has personally supervised



- GROSS SECTION -



- PLAN -

Query 140.—Fig. 2. Showing cross section and plan of septic tank system recommended by Plumbing Inspector Herbert F. Shade, of Victoria, B. C.

the construction of at least two hundred tanks similar to this, and he has had no complaints of their unsatisfactory working.

LOOKING FOR GLASS TUBES.

141. Sycamore, Ill.—To the Editor of "Domestic Engineering." Sir: I have been intensely interested in Chas. M. McHugh's article on "The Proper Sizes of Soil Pipe," and if possible will try out his suggestions in actual practice. There are enough of us, including employees, to put the test under ordinary dwelling house conditions. Can you tell me where I may be able to obtain some 3 or 4-foot lengths of 3 and 4-inch glass pipe of strength necessary to use in vertical and horizontal runs for inspection purposes? I think a plan has been devised to make the connections tight and that in the building we occupy as office and shop there will be no vibrations to cause breakage.

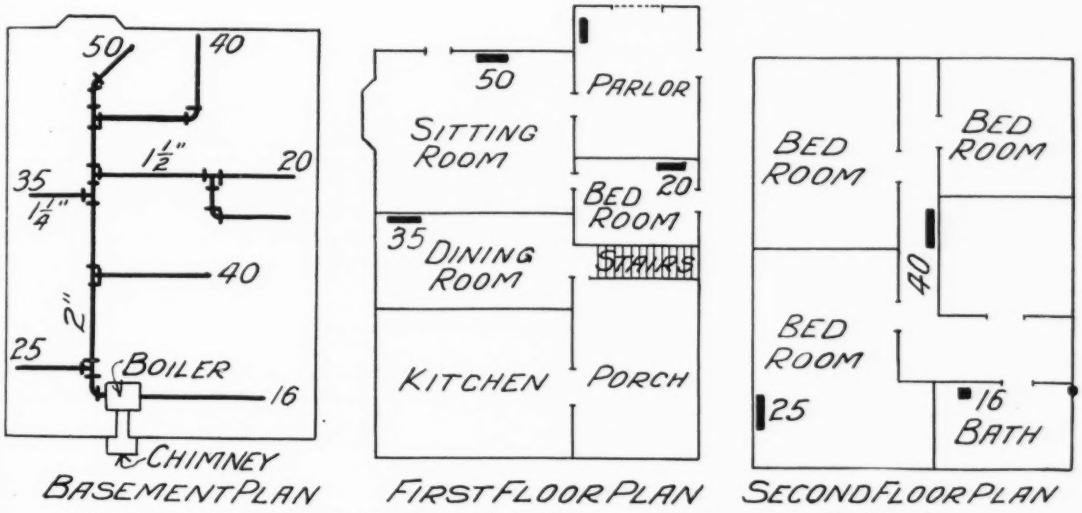
Geo. M. Tait.

We have not been able to find any manufacturer of 3-inch or 4-inch glass pipe in 3 or 4-foot lengths. The Kimble Glass Company, 142 Huron street, Chicago, make 2½-inch pipe in the lengths desired, but no larger diameters. The Heinz-Wander X Ray Tube Company, 100 Lake street, have a small stock of 3-inch pipe in

3 and 4-foot lengths which they import. Four-inch pipe will have to be made to order and imported. We are very glad indeed that you feel disposed to make an exhaustive examination of the exact facts concerning the operation of the waste which may be expected from ordinary dwelling houses flowing through pipe 3 and 4 inches in diameter. It will be an important contribution to the entire trade.

STEAM JOB RUNS 14 YEARS WITHOUT A CENT FOR REPAIRS.

137. **Clyde, N. Y.**—To the Editor of "Domestic Engineering." Sir: Over fourteen years ago I put in the job of which I enclose you sketches, in the city of Corning, in this state. This job has run all these years without one cent being paid out for repairs. The main is 2 inches and pitches toward the boiler without drips or relief and has only ⅛-inch pitch in 10 feet, as the cellar was very low and we could not sink the boiler because water would fill the pit. This job carries 256 feet of radiation, the boiler has an 18-inch grate and burns hard coal. I am an old timer in the business and what I would like to see is some of these newfangled vacuum jobs that can furnish better results. Yours truly, **J. D. A.**



Sketches showing layout of steam heating job which has run fourteen years without repairs.

SIZE OF SMOKE FLUE.

132. **Omaha, Neb.**—To the Editor of "Domestic Engineering." Sir: Please tell me how large the smoke pipe should be on a boiler that draws into an 8x12 chimney. **A. J.**

The flue 8x12 contains 96 square inches, inside measurement, and your smoke pipe should come as nearly as possible to containing the same number of inches. A smoke pipe 10 inches in diameter contains 78.54 square inches, a smoke pipe 11 inches in diameter contains 95.03 square inches, and a 12-inch smoke pipe contains 133.09 square inches. Use the 11-inch smoke pipe. The rule for finding the number of square inches in any round pipe is to multiply the diameter by itself first. Then multiply that product by the decimal .7854 and the result will give you the correct number of square inches in the round pipe. Thus: 11×11=121. .7854×121=95.0334.

SIZES OF STEAM DISTRIBUTING MAINS.

139. **Walnut Ridge, Ark.**—To the Editor of "Domestic Engineering." Sir: We have several houses to heat with hot water from our plant. The nearest house is about 800 feet from the station and the farthest house is about 1,800 feet distant. Altogether there will be required in the houses to be heated about 3,000 square feet of radiation, of which amount one-half will be required in the first house, 800 feet distant. Which would be the better to use, a small main in the street and use more power, or use a large main and have less loss due to friction? Coal will cost us $2.50 per ton. **Edw. Riedel,** for the Walnut Ridge & Hoxie Light, Power & Transit Company.

Use large mains and low pressure; 35 pounds outgoing pressure and 15 pounds incoming pressure will be about right. It is not advisable to use high pressure on cast iron radiators, and high pressure would be apt to cause trouble in ordinary radiator valves.

EXPANSION OF WATER WHEN IT BECOMES STEAM.

133. **Topeka, Kan.**—To the Editor of "Domestic Engineering." Sir: Will you kindly tell me about how much water expands when it becomes steam? **X. Y. Z.**

When water is transformed into steam it expands to something like 1,700 times its former volume. In other words, one cubic inch of water turned into steam becomes nearly one cubic foot of steam.

Wife—Horrors! Our daughter has eloped with your typewriting young man.

Husband—Well, you wouldn't let me hire a young woman.—New York Weekly.

NEW STANDARD SANITARY MFG. CO. IN CANADA

San Francisco Plumbing Jobbers Demand that Railways refund Overcharges

The Hunting Company's Supply Business at Rochester, N. Y., destroyed by Fire

STANDARD SANITARY MFG. CO. OF CANADA BUYS SUPPLY HOUSE AT TORONTO

The Standard Sanitary Manufacturing Company of Canada, a new corporation with a capital stock of $500,000, has purchased the jobbing business of the Somerville Co., Limited, at Toronto, Canada, also real estate, 100 x 100 feet on Richmond street, East, and 30 x 90 feet on Lombard street, with three-story buildings. The company will carry on a general jobbing business and especially push the sale of the "Green and Gold" Standard enameled goods. W. A. Porter, former manager of Somerville Co., Limited, will be manager. The company expects soon to build a factory, probably in Toronto, for the manufacture of Standard enameled baths, lavatories, etc.

ASK RAILWAYS TO REFUND OVERCHARGES.

A highly important meeting was held in San Francisco a short time ago when Interstate Commerce Commissioner Charles A. Prouty opened the hearing on the complaints of consignees in that city and Los Angeles that **the visible capacity of freight cars when loaded with plumbing materials** and other commodities **is less than the carload minimum on which the freight rate is collected** by the carriers. Seventy-four specific cases were cited involving alleged overcharges amounting to several thousand dollars. The complainants demanded that these charges be refunded and in many cases this, no doubt, will be done, but as Commissioner Prouty expressed it at the commencement of the hearing, the damages are trivial in comparison with the importance of the principle involved. His opinion was evidently shared by the railroads, for more than a score of the great systems of the country were represented at the meeting by counsel. W. M. Robertson, buyer for W. W. Montague & Company, was the first witness called, and through him it was shown that while cars loaded with steel bath tubs were filled to their utmost capacity they were still under the minimum weight. Five specific cases were cited by him to prove that such a condition prevails. Robertson was not familiar with the traffic end of the business, and could not testify as to the condition of the merchandise after its arrival in San Francisco, further than that the weights furnished by the railroads themselves were less than the minimum rates. He stated that the manufacturers had standing orders to permit no car to move unless it was loaded to its minimum capacity or to its visible capacity at least, and that it was with great difficulty that cars were secured large enough to permit the minimum weights of goods of this class to be packed in them. During the hearing it developed that some of the Western roads had made a ruling to the effect that where a car is loaded to its full capacity and is still under the minimum rating, the shipment shall move under the actual weight. This rule went into effect on February 1 of the present year, but was being opposed by some of the Eastern lines not a party to the agreement. Later it was shown that this ruling did not apply to plumbing material.

HUNTING CO.'S SUPPLY HOUSE DESTROYED BY FIRE.

The Hunting Company's plumbing supply house at Rochester, N. Y., was destroyed in the large conflagration which visited that city on Tuesday afternoon, April 13. Its loss is estimated at $100,000.

SOIL PIPE VERY LOW.

Not in twelve years has soil pipe been sold at so low a price as at present. From 2" to 6" standard pipe is now selling at one and one-fourth cents a pound at the foundry; 2" to 6" extra heavy is now selling at one cent a pound at the foundry; fittings are selling from one and one-fourth to one and five-eighths cents per pound at the foundry. It costs less to make water pipe than it does to make extra heavy soil pipe, but the comparison between the selling price of cast iron pipe and soil pipe will show how soil pipe is being sacrificed. It costs twice as much to make soil pipe fittings as it does to make water pipe fittings and still there is a very large difference in the selling price, in favor of water fittings. Prices have gotten so low that with pig iron at $12.50 per ton, it is stated that only plants of the most modern construction and with strong organizations are able to turn out pipe without a loss. This being the case is it not well to warn jobbers and master plumbers to be particularly careful to examine the soil pipe and fittings which they receive, with particular reference to their weight and size? With prices at such a low figure, foundries not able to compete in costs will endeavor to break even by sacrificing quality, and as no jobber or master plumber desires to be imposed upon in this way, a strict examination is necessary. In a recent inspection in Chicago some pipe was found which was marked "Extra Heavy, Tested" but did not bear the name of the maker. Why? The answer would be secured by putting a few lengths on the scales. Soil pipe has recently been found measuring 3¼" inside diameter. All of these miserable impositions should be carefully watched for and prevented if possible.

WHITNEY & FORD ENLARGE FORCE.

Whitney & Ford, of Chicago, announce that they have secured the services of Chas. H. Brown and Geo. W. Tipple. Mr. Brown, who was formerly connected with the Ahrens & Ott Mfg. Co.'s branch at New Orleans as its representative with headquarters at El Paso, Tex., will call on the Chicago plumbing trade, while Mr. Tipple will cover Southern Illinois and parts of Iowa and Wisconsin in Whitney & Ford's interest.

A BRASS FOUNDRY IN THE FAR WEST.

The **T. P. Bruce Manufacturing Company,** of Los Angeles, Cal., has been incorporated with a capital stock of $75,000. A brass foundry will be one of the most important departments of the new concern.

ARRANGE TO ERECT NEW FACTORY.

The **Hempstead Brass Company,** of Hempstead, L. I., has arranged for the erection of a new factory, 120x820 feet, one story high. It will be located near its new brass foundry and be built of concrete blocks. The company states that the reception accorded its line of brass plumbing specialties has made larger quarters and increased facilities imperative.

PREPARING FOR BASEBALL SEASON.

The New York fans who compose the Plumbing and Steam Fitting Supply Baseball League held another meeting of the league in the offices of the John Simmons Co. Six of the eight clubs in the league were represented by their managers, who reported that the remainder of the enthusiasts were "warming up" on the diamond. The action taken at the last meeting in relation to using the Taylor ball throughout the season was withdrawn, the league having received good offers from various other manufacturers. The matter will be reconsidered, as well as the selection of diamonds, at the next meeting, which will be held at the American Radiator Co. 104-8 West Forty-second street, on Friday evening, April 23, at 6 o'clock.

SEAMLESS STEEL BATHTUB REORGANIZED.

The Seamless Steel Bathtub Company's plant, at Detroit, Mich., has been purchased by a syndicate of stockholders in the company, who will at once reorganize the business under the name of the Seamless Steel Manufacturing Company. E. H. Sloman, who had much to do with forming the first company, states that the new company will be capitalized at $600,000 and that of this amount $300,000 will be offered for sale. D. M. Ireland, of the Ireland & Matthews Mfg. Co., is president of the new company and E. L. Wayman its general manager. It is expected that the factory will be in operation once more in about 60 days. The plant includes some 8½ acres of ground and the stamping capacity will be increased to 500 tubs a day.

BUYS THE KALAMAZOO ROOF FLANGE.

F. W. Conradt, treasurer of the Great Western Pottery Co., of Kokomo, Ind., and Tiffin, O., has purchased the business of the Kalamazoo Roof Flange Co., of Kalamazoo, Mich., and will soon form a separate company for putting this article upon the market in all the various sizes required by the trade.

INCORPORATE TO DEAL IN PLUMBING GOODS.

The Welker Supply Company, of 2234-40 East Ninth street, S. E., Cleveland, O., has been incorporated to deal in plumbing supplies. Adam Welker, until recently sales-manager for the Sanitary Co. of Cleveland, is secretary and treasurer of the new company.

APPOINTED NEW YORK SALES AGENTS.

Pearce & McCall, of 142 West 42d street, New York, have been appointed selling agents for the Quinn Manufacturing Company, of Kalamazoo, Mich.

DOUBLES ITS CAPITAL STOCK.

Cuyler K. Sanborn, president of the Bay State Brass Company, 150 Nassau street, New York, states that the capital stock of his company has been increased 100 per cent and that ground will be broken in a few days at its plant at Haydenville, Mass., for the erection of new buildings that will double its size.

RUNNING DAY AND NIGHT.

The Riverside Boiler Works, on Harvard street, Cambridge, Mass., are making quite extensive additions to their plant, in the shape of new machinery and they are so busy that they are running day and night with a double crew.

W. A. RUSSELL & COMPANY MOVE.

W. A. Russell & Co., formerly at 89-91 Centre street, New York, have removed their offices to 63 West Thirty-seventh street, where they occupy the entire main floor with ample room for displaying and stocking their complete line of steam specialties. The firm has been located at the Centre street address for a number of years, and the old offices will be missed by many a downtown visitor who was wont to stop there on his travels. Mr. Russell considers it an excellent move, notithstanding the distance from the old stand, as the tendency of the trade during the past few years has been toward the uptown centers.

BEATON & CORBIN NOT PLANNING CONSOLIDATION.

The Beaton & Corbin Mfg. Company, of Southington, Conn., most emphatically denies the report that it is arranging a consolidation with the Beaton & Bradlee Company, of New Britain, Conn., and the Andrew H. Magee Company, of New York City. The Beaton & Corbin Mfg. Company is at present enlarging its plant, plenty of orders are coming its way and it has no intention of changing its present condition.

CRANE VALVE COMPANY NOW ITS NAME.

The Eaton, Cole & Company, of Bridgeport, Conn., has been granted its application for permission to change its name to that of the **Crane Valve Company.** This marks the passing of a name which for more than a generation has been a household word in the trade.

NEW HEATING AND MILL SUPPLY CONCERN.

The W. R. Peete Company, Inc., has engaged in the jobbing business of heat and mill supplies at Memphis, Tenn. W. R. Peete, who is at the head of this new venture, has been manager of the Memphis branch of Crane Company for the past few years. Desirable new quarters have been leased on Second street, near Gayoso, where modern facilities have been provided. The building of brick construction, is now under course of erection and will be three stories in height. Mr. Peete, who is now making a trip through the North and East in the interest of his concern, carries with him in his new field the best wishes of a host of friends.

PURCHASED NEW FACTORY BUILDING.

The Lyman Mfg. Co., of Buffalo, N. Y., has purchased a new brick building, 145x45 feet, at 1862 Elmwood avenue in that city, which it will equip for the manufacture of its plumbing specialties.

METAL MARKET SHOWS INCREASING ACTIVITY

Iron Prices Still Irregular. Copper a little higher. Lead Market Dragging.

New York Metal Market, April 13.

Copper, Prime, Lake	$ 13.00
Copper, Lake, Arsenical brands	12.80
Copper, Electrolytic	12.70-12.80
Antimony, Cookson's	8.25- 8.37½
Lead	4.15
Straits Tin	29.60
Spelter	4.95

Chicago Iron Market, April 15.

Southern, No. 2, Foundry	$15.35-15.85
Northern, No. 2, Foundry	16.50-17.00
Lake Superior Charcoal	19.50-20.00

April 15, 1909:

Foundry iron was the same price as the week previous
$1.00 less per ton than the year previous
$6.00 less per ton than 2 year previous
Copper was the same price as the month previous
⅛c per lb. less than the year previous
12½c per lb. less than 2 years previous

IRON MARKET SHOWS IMPROVEMENT.

Cleveland, O.—Business shows considerable improvement in tonnage of finished products, but prices are extremely irregular says The Iron Trade Review. Decidedly more interest is shown in the pig iron market. Improvement in inquiry for pig iron is noticeable and heavy sales of the southern product, especially in the Chicago district, have been made within a few days. It is estimated that sales of southern iron for the month amounted to more than 150,000 tons.

COPPER ELECTROLYTIC HIGHER.

New York, N. Y.—The firmer foreign copper market brought a good many inquiries from American consumers and considerable copper for prompt and future delivery is under consideration, says The American Metal Market. Electrolytic and Casting are higher but Lake is unchanged.

Lead Market Dull and Dragging.

St. Louis, Mo.—The lead market continues dull with sales only in small lots from hand to mouth. Sellers, however, are firm and holding out for good prices. Most of the producers are in a position to be independent, as there has been considerable curtailment of the production, and all are of the opinion that with the settlement of the tariff question, business will show a quick improvement.

MILLIONS FOR BIG TUBE PLANT.

Pittsburg, Pa.—It was stated here last Wednesday that the $10,000,000 bond issue recently authorized by the Republic Iron & Steel Company would be utilized in the construction of a new plant to cost anywhere from $10,000,000 to $15,000,000 at Youngstown, Ohio, where the company already has a large plant. The new plant, it is stated, will be for the manufacture of tubes, which have not hitherto been made by the Republic company. John W. Gates, who is said to be largely interested in the Republic company, also has large oil interests in the South, and the report is that the new plant will turn out pipes and tubes for use in these oil fields.

CALLED BY DEATH

Wm. H. White, a well known plumber of Barre, Vt., passed on at his home in that city on Thursday, April 8. He was a member of Mt. Zion Lodge, A. F. & A. M.

A. M. Gilbert, formerly president of the Buda Foundry & Manufacturing Company, of this city and Harvey, Ill., passed on last Wednesday in Santa Barbara, Cal. Mr. Gilbert was 61 years old and had been ill for more than a year. His wife and daughter were at his bedside when he passed away. Prior to his acceptance of the presidency of the Buda company, Mr. Gilbert had been vice-president of Fairbanks, Morse & Company, and vice-president and manager of the Crane Company. He was a member of the Chicago Club and the Glen View Golf Club and had lived in Chicago for forty years.

IN MEMORIAM—T. J. WATERS.

Chicago, Ill.—At the regular monthly meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers, held Monday evening, April 12, at the Sherman House, resolutions were passed in memory of the late Thos. J. Waters, chief engineer of the Board of Education of Chicago and charter member of the American Society of Heating and Ventilating Engineers, and also charter member of the Illinois Chapter, who passed on several weeks ago. A fine memorial was prepared for the family, consisting of a leather bound book containing many hand illuminated drawings. Among the various speakers who made remarks upon the past life labors and memories of the departed were N. L. Patterson, J. P. Dugger, W. A. Pope, Geo. Mehring, J. M. Stannard and E. F. Capron. Geo. Mehring spoke at some length upon the past life of Mr. Waters and dwelt upon his many admirable qualities as a man and citizen. In the course of his remarks N. L. Patterson, who was for some time associated with Mr. Waters in the office of the Board of Education, brought up many pleasant and touching memories showing the personal qualities of Mr. Waters. Mr. Dugger, Mr. Pope, Mr. Stannard and Mr. Capron all dwelled upon the character and characteristics of their departed friend.

CLEVELAND PLUMBING CODE PASSED.

Cleveland, O., April 16. (Special).—The new plumbing code was passed by the city council at its meeting this week, with a vote of 27 to 4, and the Mayor signed it this morning.

AMONG THE WORKERS IN THE LABOR FIELD

Buffalo Journeyman Plumbers Still on Strike with No Settlement in Sight

Lynn Master Plumbers Sign Agreement with Journeyman Steamfitters

BUFFALO PLUMBING STRIKE STILL ON.

Buffalo, N. Y.—It now looks like a fight to a finish between the striking journeyman plumbers and the master plumbers, while the general public stands by and waits impatiently for the time when plumbing work can be installed in new houses, and repairs and alterations made in old ones. The master plumbers are sending out circulars to their customers in which they state the causes of the strike, and their reasons for refusing the demands of the men. They ask their customers to put up with any inconvenience the strike may occasion, and promise to do all in their power to bring this inconvenience to an end as soon as possible.

LABOR AGREEMENT RATIFIED.

Lynn, Mass.—The master plumbers have entered into the following agreement with steam and gas fitters' unions: "Eight hours shall constitute a day's work. All night and Sunday work shall be paid for at double time rates. No fitter shall be requested to work with a helper; car fares shall be paid by the employer on all jobs over one mile limit. On all out-of-town work board and car fare shall be paid by the employer, with the privilege of paying car fare daily. No work shall be done on July 4, Labor day, Thanksgiving and Christmas. No more than one helper shall work with any fitter. Helpers shall not be allowed to do fitter's work. No plumber or tinsmith shall do steam or gas fitters' work under any circumstance. The minimum wage shall be $4 per day. Five and one-half days shall constitute one week's work. All necessary tools shall be furnished by employers. Master steam and gas fitters shall not subcontract work to shops that do not employ union fitter members of Local 277, shall not contract for work for any person or persons not recognized as master fitters. These trade rules shall take effect May 1, 1909, and remain in force for one year."

SPRINGFIELD PLUMBERS ELECT OFFICERS.

Springfield, Mass.—The Master Plumbers' Association of this city held its annual meeting Thursday evening, March 25. **Officers were elected** and other routine business transacted and after the meeting a bowling match was enjoyed. The officers elected were as follows: **President, J. G. Howland; vice president, C. A. Allbe; secretary, James F. Walls; treasurer, L. W. Dunlap; board of directors, George Smith, John W. Kennelly and John Neylon.**

MASTER FITTERS TO MEET AT NIAGARA.

New York, N. Y.—The National Association of **Master Steam and Hot Water Fitters** will hold its twenty-first annual convention at **Niagara Falls, N. Y.**, and the dates, says the "Official Bulletin," will probably be June 14-17, 1909. The headquarters of the convention will be established at the International Hotel.

NEWPORT PLUMBERS ELECT OFFICERS.

Newport, Ky.—The Master Plumbers' Association at its recent annual meeting elected the follow officers for the ensuing year: **President, Geo. F. Fulner; vice-president, James Maher; secretary, Geo. W. White, 839 York street; treasurer, Geo. E. Morlidge; sergeant-at-arms, Hon. W. J. Richards;** trustees: F. J. McLaur, W. A. Ulmer and Albert Kruse; delegates to the National Convention at Detroit: Geo. F. Fulner and W. W. White. Entertainment committee: F. Patrick Maher, W. Anthony Ulmer and F. Jonathan McLaur. Official roaster and toastmaster, Hon. Walter J. Richards.

MASTERS OPPOSE PLUMBING BILL.

Boston, Mass.—David Craig, of this city; J. W. Kennelly, of Springfield; John Cavigne, of Salem; W. R. Parks, Jr., of Taunton; and E. J. Kelley, of Boston, were among the master plumbers who appeared before the committee on mercantile affairs at the state house a few days ago to oppose a bill which is now pending to provide for a state board of plumbing examiners. They opposed the bill on the ground that it would be an extra expense and a hardship on the employers since they would be called upon in most cases to pay the registration fees, etc., of their employes. They also argued that there is already sufficient law on the statute books of the state regulating their particular line of business.

CONVENTION DATES.

April 21, 1909.—Twelfth annual convention of **Colorado Master Plumbers' Association,** at Pueblo, Col.

April 26, 27 and 28.—Annual convention of the **Associated Masters Plumbers of Texas** at Dallas.

May 5, 6 and 7, 1909.—Joint convention of the **Southern Supply and Machinery Dealers' Association** and the **American Supply and Machinery Manufacturers' Association,** at Chattanooga, Tenn. Headquarters at Hotel Patten.

May 12, 13 and 14, 1909.—Joint convention of the **American Supply and Machinery Manufacturers' Association** and the **National Supply and Machinery Dealers' Association,** at Pittsburg, Pa. Headquarters at the Fort Pitt Hotel.

May 18-19, 1909.—The fifteenth annual convention of the **Pennsylvania State Association of Master Plumbers,** at Wilkes-Barre.

June 22, 23 and 24, 1909.—The twenty-seventh annual convention of the **National Association of Master Plumbers, at Detroit, Mich.**

CHICAGO PLUMBER EXAMINER ARRESTED

HUGH SMITH ACCUSED OF ACCEPTING A BRIBE.

Chicago, Ill.—Upon Tuesday last Hugh H. Smith, a member of the city board of examining plumbers, was arrested on the charge of having extorted $50 from George Haney, who took an examination for a plumber's license and who claims he paid the money in accordance with the demand made upon him. Smith, who lives at 1620 West Twelfth and is well known in politics stated that he was not "guilty of anything crooked" and "that there must be some kind of a frame up to injure him" and "that he believed he had cause for redress." He admitted taking the money, but stated that he did not take it as a bribe, stating that it was a personal matter between Haney and himself. The arrest was made at the city hall by detectives at the direction of State's Attorney Wayman, who stated that "I will prosecute bribe takers and grafters of all descriptions" and that "a public official who takes a bribe belongs in the penitentiary and that is where I intend to send such men whenever I have the evidence."

The Plumbers' Examining Board examines applicants for certificates as plumbers and if the applicant passes, issues a certificate authorizing him to engage in the plumbing business in Chicago. The fee for masters is $5.00 and for journeymen $1.00. Haney took the examination March 23, and states that he was told by Hugh Smith that he must first pay the $25 required by Business Agent Garvin before he could get a license. On his return to the office he claims he was told he would have to pay $50, which he paid in marked bills at the direction of State's Attorney Wayman. It was then that Smith was arrested by detectives. Smith was arraigned before Municipal Judge Hume on Wednesday and his case continued until Saturday, April 24.

Personal

E. A. Morris, secretary-treasurer of the Detroit Lead Pipe & Sheet Lead Works, of Detroit, Mich., has just returned from a trip to the Pacific Coast.

Geo. P. Stannard, of J. J. Ryan & Company, Chicago, is at present on a trip through Iowa and Nebraska, from which he reports business good in the West.

Harry Snow, of the Peerless Selling Company, of Evansville, Ind., has just returned from a trip through the copper country, where he found business very good, his sales being twice as large as they were on a similar trip at this time last year. From Chicago it is his plan to go south, covering his Illinois, Indiana and Kentucky territory, calling on his many friends in the trade in those parts of the country.

George E. Downe, of the boiler department of the American Radiator Co., has been making an extended visit in Great Britain and Germany. We regret to announce that he has been seriously ill at the home of his brother Henry S. Downe in London. There has been a complication of pleurisy and rheumatism which has confined him to his room but we are glad to announce a decided improvement.

N. W. Hunt, Pennsylvania representative for the Herendeen Mfg. Co., of Geneva, N. Y., is now located at Williamsport, Pa.

Messrs. McCrum and Howell, of the McCrum-Howell Co., 46 and 48 East Twentieth street, New York City, are receiving congratulations on account of the successful consummation of a large real estate transaction in the Connellsville coking coal fields of the Pittsburgh district. In December they purchased three thousand acres of coking coal, being the last of the coking coal area in the Connellsville district, and in March they resold the same to the Isabella Connellsville Coke Co. for the consideration of five million sixty-five thousand dollars, which was quite a considerable increase over the original purchase price.

MR. RAHM'S AUTOMOBILE ON A RAMPAGE.

J. B. Rahm, vice-president and manager of the United States Supply Company, of Omaha, Neb., did not have an earthquake at his home, 1106 South Thirty-first street, in that city, last Saturday, says the "Omaha World Herald." Neither did he receive a visitation from a tornado or the tail of a comet. It is due Mr. Rahm to make this statement in correction of the stories to which the commotion in his back yard and the all too plain wreckage of his premises have given rise. To save Mr. Rahm the annoyance attendant upon many telephone calls and telegrams the truth is here given. It was really an automobile that did it, a fine, new, forty-horsepower machine too anxious to get into his barn. On the way home the machine behaved itself like a perfectly well trained, family-broke car should. When he turned into the driveway at his home, however, things began to happen. The machine wasn't used to the terrace effect of Mr. Rahm's yard, and it began to slide off the drive. One wheel slid over the terrace and went spinning around in midair. Mr. Rahm's son-in-law, who was accompanying him, muttered something about that being the place where he had intended to get out and slid over the side. Mr. Rahm himself thought perhaps the car could find its way to the barn alone, even if it was a new one, and he made a flying get-away. The car kept right on for the barn. On its way it peeled off several hundred feet of siding from the house, ripped off the back porch, tore down two cherry trees and the grape arbor and battered down the front of the barn. By that time Mr. Rahm had reached the conclusion that the car was a mite too careless about its method of getting there, and recalled that he might put an end to proceedings by turning off the power. With the lamps and the wind-shield broken off, and the fender twisted, the machine, otherwise unhurt, was taken back to the garage for repairs.

Our Betters.

The Customer—"I say, d'you know you half poisoned me with those beastly mushroms I had here last week?"

A Mysterious Whisper—"Then you owe me 6 pence, 'Erbert. I told yer so."—The Sketch.

GOOD-SIZED CONTRACTS AWARDED THIS WEEK

Master Plumbers and Steamfitters in All Parts of the Country Secure Good Jobs

San Francisco, Cal.—Belknap & Thomas, of 328 Fell street, has the contract for the plumbing in the new Cliff House which is now rapidly approaching completion.

Huron, S. D.—Frank J. Aehn, of Springfield, Minn., has been awarded the contract to erect the new Masonic temple here at a cost of $50,000. Work begins at once.

Everett, Wash.—Model Plumbing Company has secured the contract for the plumbing in the Columbia Lutheran College building now being erected here at a cost of $50,000.

Portland, O.—Kiggens & Pennock have been awarded the contract for the heating and ventilation of the new Southern Methodist church. The consideration amounts to about $3,000.

Dover, Del.—Breckinridge & Wilkinson have been awarded the contract for the installation of two modern and up-to-date bath rooms in State Senator Harry Richardson's residence on State street.

Dover, N. H.—John Baty, of 44-50 Locust street, has secured the contract for the plumbing and gas piping in the large flat building which is now being erected for V. Mathes. The consideration is $2,550.

St. Paul, Minn.—Thomas Davis & Sons have secured the contract for plumbing and steam heating the new fire engine station at Ashland and Snelling avenues. Their bid was $1,397 for the plumbing, $1,210 for the heating.

Cincinnati, O.—The Peck-Hammond Company has been awarded the contract for the installation of a ventilating system in the banking rooms of the Provident Savings Bank & Trust Company. The consideration is $4,715.

Frederick, Md.—Edward S. Mobley & Brothers, of this place, have secured the contract for the centralization of the power and heating plants at the Western Maryland College, Westminster, Md., at an approximate cost of $15,000.

San Francisco, Cal.—The Lennig-Rapple Engineering Company, of 1402-6 Call building, has been awarded the following contracts: The heating of the Butler building, $2,800; the heating of the German Old People's Home Association, at Oakland, $5,147; the heating of the City of Paris building, $6,600, for the City of Paris Dry Goods Store, of San Francisco.

Pittsburgh, Pa.—The plumbing in the alterations and rebuilding of the old 6-story McClintock Building on Oliver avenue was awarded to Ira A. Mann by the architects, MacClure & Spahr. Nearly one hundred sanitary fixtures will be used in reconstructing this building.

Louisville, Ky.—F. S. Schardein & Sons, of 603 West Market street, have been awarded the contract for the installation of a steam heating system in Gibbs-Inman Printing Company's new building. The amount of the contract is $1,500.

Green Bay, Wis.—Wigman & Martin have secured the contract for the installation of a heating system in the new West high school, and Brehme & Delfarge will install the plumbing. Ground has just been broken for this building, which will cost in the neighborhood of $125,000.

Chico, Cal.—Walter F. Pilgrim has secured the contract for the installation of plumbing and hot water heating systems in H. Silberstein's new three-story brick building. The consideration for the plumbing work is $2,400. The amount of the heating contract has not yet been announced.

Brooklyn, N. Y.—The Backert & Schroder Steam Heating Company, Inc., of 474 Broadway, Brooklyn, has on hand a large bunch of contracts, among which are the following: Heating nineteen four-story buildings for the Parkway So. Realty Company; heating two six-story apartments for Feird Ball R. & Const. Company; heating fourteen three-story buildings for A. Frankel; heating shelter houses for city of New York; heating five four-story double apartments for Geo. F. Keim; heating twenty three-story buildings for I. Kronengold; heating five three-story buildings for Phil. Bierschenck.

BLANK FOR

Report of an Award of Heating or Plumbing Contract

(Cut out, fill in and mail promptly)

DOMESTIC ENGINEERING
Chicago

We have been awarded the contract for

_____
plumbing or heating

the _____; the
kind of building

amount of the contract being $_____

Owner's name _____

Address _____

Architect's name _____

Address _____

General Contractor's name _____

Address _____

Our own name _____

Address _____

BUSY SEASON OPENS IN SOUTHERN STATES

Our Special Representative Reports Plumbing and Heating Contractors Securing Profitable Work

Milford, Del.—Wm. Gray is doing the plumbing work in the residence of R. H. Pierce on Lake avenue.

Laurel, Del.—W. J. Adams will do the plumbing work in new residence being erected by Albert Phillips.

Pocomoke, Md.—Picken & Son have started work on the plumbing contract in M. Atkinson's residence.

Baltimore, Md.—F. M. Neighoff has recently started a plumbing business at 830 Frederick avenue, Extd.

Crisfield, Md.—Sterling Bros. have the plumbing work in John B. Robins' new residence nicely under way.

Laurel, Del.—Orlander Burton has recently completed the plumbing work in Miss S. C. Fork's new residence.

Princess Anne, Md.—D. D. Hickey has the Albert Snyder plumbing contract at Jamestown, Md., nicely under way.

Baltimore, Md.—R. Milton Carnes has recently opened a plumbing establishment at 1212 Frederick avenue, Extd.

Baltimore, Md.—C. E. Waters of 1307 Edmondson avenue, is doing the plumbing for A. R. Padgett at 920 W. North avenue.

Smyrna, Del.—R. E. Long has a number of good plumbing and heating contracts under way and is expecting a very busy season.

Dover, Del.—Breckenridge & Wilkinson have recently secured the plumbing work for James Carson's new residence on Division street.

Interior of a flourishing Southern plumbing establishment, that of E. O. Moore, Kinston, N. C. Mr. Moore appears in the picture with his crew of assistants. Please note Mr. Moore's diversified business, which includes heating stoves and oil stoves.

Lewes, Del.—Harry Maull is installing a plumbing system in the new residence being built by Captain John Lynch on Washington avenue.

Crisfield, Md.—J. W. Thawley & Son have secured the contract for the plumbing and heating work on G. M. Collins' residence at a $700 figure.

Atlanta, Ga.—Bashlor-Wynne Plumbing Company has moved its business from its former location at 144 Marietta street to new quarters at 16 North Broad street.

Baltimore, Md.—Geo. Kaiser of 206 Frederick avenue, Extd., has a $25,000 operation under way on Gorman avenue, consisting of plumbing, heating and gas work in 84 houses.

Atlanta, Ga.—The Gem Plumbing Company has on its books an unusually large amount of work. We can mention the plumbing installation in a new building for Shroeder Brothers.

Baltimore, Md.—Jas. McCrea & Son of No. 9 Carrollton avenue, are erecting a three-floor brick block at No. 19 Carrollton avenue, which they expect to occupy about May first.

Baltimore, Md.—F. A. McCrea has some $10,000 worth of plumbing and heating work under way at present. He is working on fourteen jobs in Catonsville and some twenty in Baltimore City.

Atlanta, Ga.—J. L. McClung has succeeded to the plumbing business established by B. A. Reynolds & Son at 49 North Forsyth street. He would be happy to receive descriptive matter from dealers in that line.

Baltimore, Md.—George Kirkley, of 701 Calhoun street, has started work on his plumbing contract in the new Sisters' Home of Notre Dame at Notch Cliff. The plumbing is to be modern throughout, consisting of 125 fixtures.

Monroe, Ga.—Guarantee Plumbing Company is the style of a new firm to engage in business under the management of W. E. Shirley. They would be glad to receive catalogues and price lists from manufacturers and jobbers in their lines.

Georgetown, Del.—J. G. Green, one of the leading master plumbers and superintendent of the Georgetown gas works has several plumbing contracts under way and has just secured the contract for the plumbing and gas work in W. W. Jefferson's new residence.

Atlanta, Ga.—Kirkman Plumbing Company has succeeded to the lucrative business for many years conducted here by R. F. O'Shields, at 12 East Hunter street. Mr. Kirkman is a former employe of the latter's business. He would like to hear from dealers in his line.

Atlanta, Ga.—The Sanitary Plumbing Company has recently completed the equipment of plumbing and heating systems in the Shippey building on Whitehall street. At present it is placing the plumbing in an apartment building on East North avenue for George Nelson.

Governstown, Md.—Wm. H. Wax & Co. report a bright outlook for work along plumbing and heating lines. He has secured a contract for a hot water heating system in the residence of Herbert Byrd, of Glen Rock, Md.

O. T. Carson.

Snug Selections.

You can always find among our wide assortment of patterns AMERICAN Radiators to fit every space; short, narrow, in corners, around bay windows and in angles, as snugly as a "a pigeon in a pie" as the old saying goes.

AMERICAN Rococo Radiator in dining room pattern.

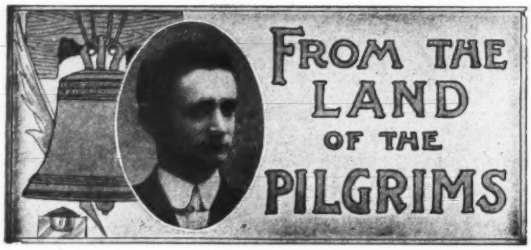
AMERICAN Radiators and IDEAL Boilers are made for the houseowner's service: In pleasing him by giving him the right pattern, size and shape to fit each of his needs the Trade reaps with us the harvest of his satisfaction.

AMERICAN RADIATORS & IDEAL BOILERS

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco



Waltham, Mass.—J. L. Hannify has the plumbing and heating for a large residence at Tower Hill.

Bridgeport, Conn.—The plumbing firm of Lord & Roberts has been dissolved and A. E. Roberts will continue the business in the future.

Lenox, Mass.—William B. Bull has been awarded the contract for plumbing the high school building. The contract price was about $2,500.

Stonington, Conn.—E. S. Chesebro, who for thirty-five years has been engaged in the hardware and plumbing business, is closing out his stock.

Benson, Vt.—Will Johnson, who has been engaged in the plumbing business here for the past two years, has given up the business and closed his shop.

Claremont, N. H.—The new firm of Weed & Smith, plumbers and tinsmiths, have opened a place of business at the corner of Broad and Tremont streets.

Pittsfield, Mass.—Noble & Milne have the contract for extensive plumbing changes in the villas of Mrs. Francis C. Barlow and Richard C. Dixey in Lenox.

Pittsfield, Mass.—W. J. Shedd has moved his plumbing establishment from Curtiss terrace to his new place on Plunkett street, where he will continue the business.

New Canaan, Conn.—Wolfel & Greenwald are installing two new bath rooms, hot and cold water and other plumbing fixtures of modern design in the house of W. A. Smallhorn.

New Canaan, Conn.—Walter Johnson, of the plumbing firm of Daskam & Johnson, has purchased his partner's interest in the concern and in the future he will conduct the business alone.

Milford, Mass.—John J. Cooney and John E. Higgiston have entered the plumbing and steam and gas fitting business and have opened a place of business at 104 Main street, corner of Spring street.

Springfield, Mass.—T. J. Morris, who has been employed as heating engineer of the W. J. Hyland Manufacturing Company, has resigned his position and started in the heating business for himself.

Putnam, Conn.—W. F. Raffety, the Pomfret street plumber, has been awarded the contract for the plumbing at the new Tourtellotte Memorial high school, now in progress of erection at North Grosvenordale.

Holyoke, Mass.—Martin F. Bowe has been appointed a member of the board of plumbing examiners for the city of Holyoke. His associates on the board are Dr. A. B. Wetherell, Plumbing Inspector F. L. Avery and City Engineer J. L. Tighe.

Milford, Mass.—Pratt Brothers have moved their plumbing establishment from the Lincoln House block to C. R. Scott's property directly across the street, where they have larger facilities for attending to work which is intrusted to them.

Marlboro, Mass.—L. Farley & Co. are establishing a plumbing, heating and ventilating business at 144 Broad street. The firm consists of L. Farley and T. Mailhiot, both of whom have recently been in the employ of George R. Hall & Co., the former for fourteen years and the latter for seven years.

Vergennes, Vt.—J. W. Ryan, who has been connected with the plumbing, heating, stove and tinware business of Robert Hudson as assistant manager for several years, has with his brother, David Ryan, of Rutland, purchased the business. The new firm took possession early in the month.

Brockton, Mass.—The Gilligan Plumbing & Heating Company, of 2 Spruce street, of which Alfred P. McAree is named as proprietor, has made a voluntary assignment to Attorney Charles A. Gilday, transferring the plumbing stock, gas fittings, accounts, horse and wagon and all other goods. The assignment is made for the benefit of creditors.

Augusta, Me.—Articles of incorporation have been filed by the Sawyer-Down Drafting Company, of Kittery, the concern being established for the purpose of manufacturing and selling down draft heating apparatus. The capital is placed at $300,000. The officers of the new company are: President, Horace Mitchell, of Kittery; treasurer, S. J. Morrison, of Portsmouth, N. H.

Melrose, Mass.—Edward Driscoll, who for a number of years past has been employed by Representative Andrew J. Burnett in the plumbing business, has purchased the business from Mr. Burnett. Representative Burnett has recently been appointed plumbing inspector of the city and as he holds a similar position in the town of Stoneham, found that he had little time for private business.

Woburn, Mass.—The firm of Shaw & Campbell, plumbers, have made a number of alterations in the office and work rooms on Walnut street. The front office has been enlarged and a show room equipped with a large display of plumbing fixtures. The concern has also bought out the business of Chester R. Smith and he is now in the employ of Shaw & Campbell. They have also recently opened a new place of business in Winchester.

Westerly, R. I.—Charles Davey and William A. Maxwell have formed a co-partnership and opened a plumbing establishment in Dixon House Court. Both young men are experienced practical plumbers, Davey having been employed for twelve years by Abel P. Randall and Maxwell having had nine years' experience, the last three in the employ of Job Thorpe. They start business with the fullest possible equipment and prepared to handle big or small contracts with alacrity.

A. H. French.

A Cave.

Cholly—"The dentist told me I had a large cavity that needed filling."

Ethel—"Did he recommend any special course of study?"—London Public Opinion.

Pacific Coast

CONDITIONS IN THE PLUMBING TRADE IN SAN FRANCISCO.

San Francisco, Cal.—Building operations are being carried on here now on a larger scale than for many months past, and, what is also a very encouraging feature, **the volume of building permits have materially increased.** The record for March shows a total of $3,141,958, a figure greatly in excess of the February record and about equal to that of January. No large buildings were included in these figures, making the showing all the more satisfactory to local interests. **Work in the plumbing line has picked up** to such an extent here that there are now no more than the average number of plumbers idle, **and it is expected that during the summer months there will be work for every plumber.** The matter of wages is being discussed by the committees of the Master Plumbers' Association and the Journeymen Plumbers' Union, but no definite agreement has been reached. It is felt that **the time is ripe for a reduction of the wage scale to conform with the return to normal conditions,** but this suggestion on the part of the master plumbers did not meet with the approval of the journeymen. However, many prominent members of the Master Plumbers' Association declare that the present scale is acceptable to them, providing it is made absolutely uniform. It is known that some journeymen are working for materially less than the published scale, and those among the master plumbers who are paying the full scale feel that an injustice is being done them and desire to be placed on an absolutely even plane with the rest of the contractors doing plumbing work. The present uneven scale is largely responsible for the cutting of prices on estimates and also serves to keep many journeymen in employment who otherwise would have to give way to better workmen. Just how a betterment of these conditions will be brought about is a matter to be settled, but if the journeymen desire to maintain the present scale of wages, the master plumbers feel that it is their duty to see that the scale is strictly maintained and that anyone accepting less should be refused affiliation with the union.

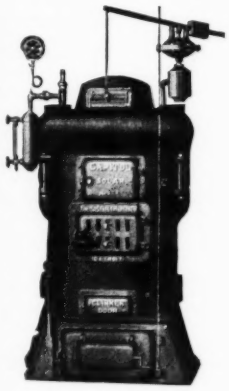
Phoenix, Ariz.—William Evans, a plumbing contractor, has filed a petition in voluntary bankruptcy.

Richfield, Utah.—The Geo. C. Morrison Plumbing & Heating Company, of this city, has been incorporated with a capital of $5,000. The officers of the company are: Geo. C. Morrison, president; W. T. Orrock, vice-president; W. R. Offerman, secretary and treasurer.

Salem, Ore.—It is planned to erect a central heating station in this city and already some large contracts have been secured for the service from owners of some of the prominent business blocks. W. H. Crawford, of Portland, Ore., is interested in the new project.

Avalon, Cal.—A fine bath house is being erected here on the Catalina Island and a new water supply is also being developed. A large amount of pipe will be needed to convey the water to the town and install the extensions to the distributing system as planned.

Capitol Solar Boilers



You can depend absolutely on the **Capitol Solar** when you need a round boiler. The Firepot is deep and corrugated, the overhanging lobes extremely sensitive and give remarkably quick action to the boiler.

The sections above, by which additional capacity is given, are easily assembled.

The grate is especially adapted for residence use because of its simple construction and ease of operation.

Made in sizes suitable for every need of a round boiler.

Write for sizes, capacities and measurements.

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

Branches:

DETROIT	139 Jefferson Ave.
NEW YORK	129 Worth St.
CHICAGO	34 Dearborn St.
KANSAS CITY	120 W. 11th St.
OMAHA	916 Farnam St.

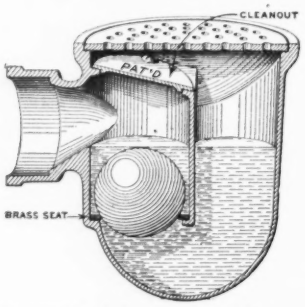
Sales Agencies:

NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
ST. LOUIS, MO., L. M. Runsey Manufacturing Co.
DENVER, COLO., Kellogg & Stokes Stove Co.

With the Makers

Hunt's Combined Floor Drain and Clean-Out.

Wm. Hunt, of 1516 South Grand avenue, St. Louis, Mo., who is known to the trade as manufacturer of Hunt's combined floor drain and clean-out, is not a new arrival in the plumbing trade, as he has been connected with it for more than twenty-three years as a journeyman and master plumber. Based on his ripe experience he has constructed the floor drain and clean-out, herewith shown, in such a manner that it, in his opinion, fills a long-felt want, as it eliminates all digging up of floors to get at stoppages. All that is needed



Hunt's combined floor drain and clean-out.

to get at them is the removal of the cover and free access to the sewer is at once attained. The drain is strong and durable and its screws are of heavy brass, making it a reliable fitting. Another feature which makes it a very desirable device is the fact that its brass ball and seat never stick. As an evidence of its reliability it may not be amiss to mention its installation in all the Bell Telephone buildings and in the public schools in St. Louis, where it has given and is giving uniform satisfaction. The manufacturer will be glad to send full particulars to interested parties upon request, mentioning "Domestic Engineering."

J. C. McAllister, with Abendroth Bros.' New England branch, in the Oliver bldg., Boston Mass., is sending his friends in the trade a handy pocket rule with the season's compliments.

Patents

916,629. Steam Valve. John D. Throop, Detroit, Mich.

916,643. Bath and Basin Fitting. Henry M. Weaver, Mansfield, Ohio.

916,511. Molding Machine. Max K. Weigel, Davenport, Iowa, assignor to Killing Molding Machine Company, Davenport, Iowa.

916,967. Flush-Tank. William M. Baker, South Bend, Ind.

917,035. Regulating-Valve for Steam-Heating Systems. James L. Fitts, Merchantville, N. J., assignor to Warren Webster & Company, a Corporation of New Jersey.

917,070. Impelling Device for Circulating Systems. Edgar P. Holly, Roxbury, Mass., assignor to Holly Steam Engineering Company, a Corporation of Rhode Island.

917,077. Safety-Valve. Christian H. Kaplinger, Roslindale, Mass., assignor to American Steam Gauge & Valve Manufacturing Company, Boston, Mass., a Corporation of New Jersey.

917,110. Flush-Valve Seat for Flushing Tanks. Peter M. Nevius, Seattle, Wash.

917,111. Pipe-Coupling. Edward P. Nole, Belle Vernon, Pa.

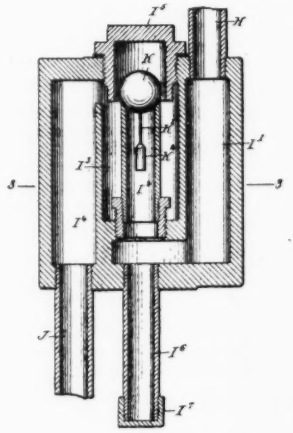
917,139. Water Purifying or Softening System. Clinton S. Robison, Chicago, Ill.

917,204. Hose-Coupling. Peter A. Walther, Chicago, Ill.

917,301. Flushometer. Lindsay R. Hurst, Louisville, Ky.

917,333. Valve. Harry B. Marlin, Barberton, Ohio.

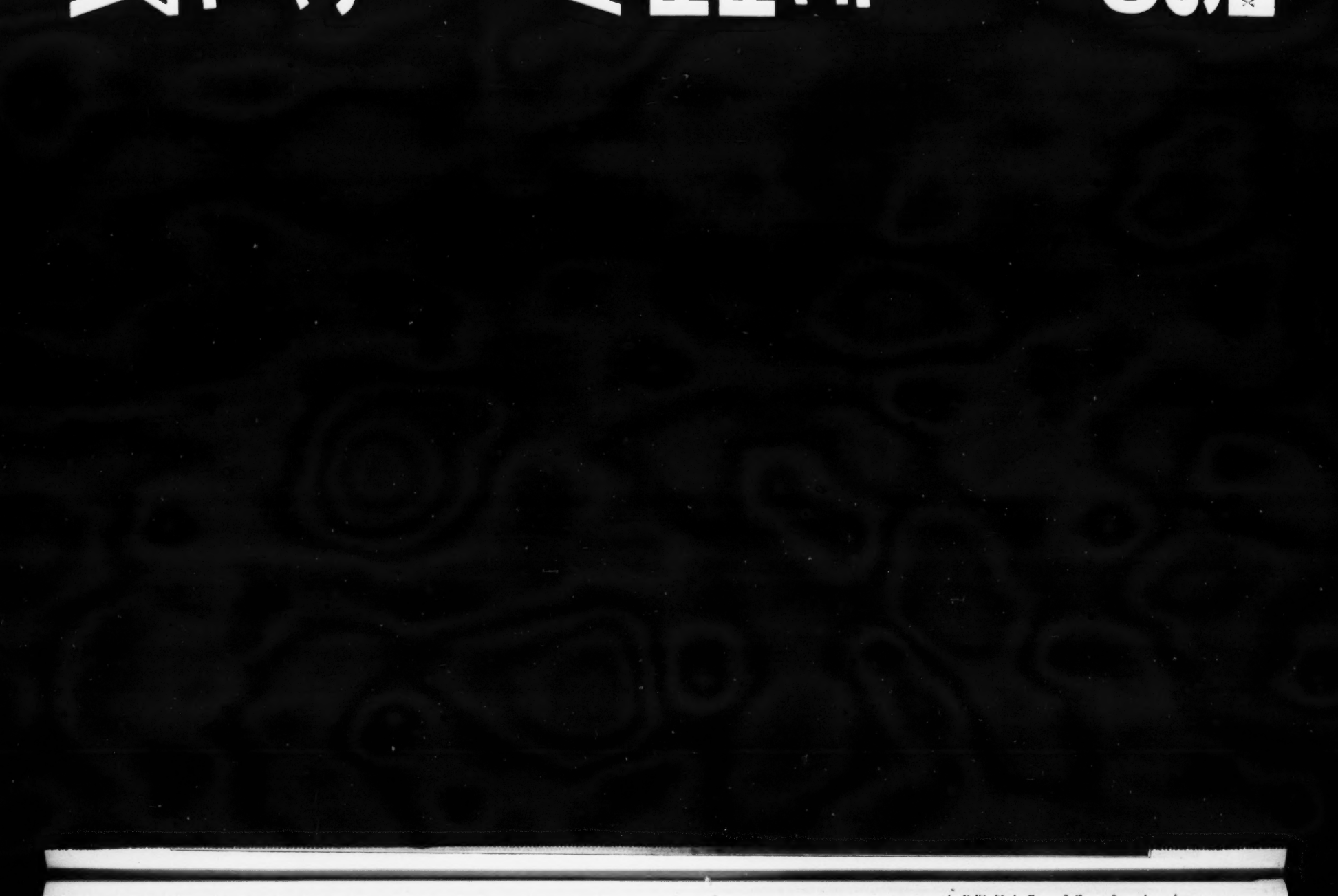
917,566. Heating Apparatus. Nelson M. Eddy, Alpena, Mich. Among the claims made for this invention are the following: "In a heating apparatus, a water return valve comprising an inlet compartment arranged for connecting with the return water supply, an outlet compartment arranged for connection with the boiler of the heating apparatus, an intermediate compartment, a vertical pipe extending into the intermediate compartment, and in communication at its lower end, with the lower end of the said inlet compartment, the upper end of the said intermediate compartment



being in communication with the said outlet compartment, a self-seating valve on the upper end of the said pipe, a drip cap connected with the lower end of the said inlet compartment, and a hollow screw plug for giving access to the said upper end of the said intermediate compartment and valve, the said plug when in position partially inclosing the said valve."

917,835. Water-Closet Vent. Harry P. Wallace, Minneapolis, Minn., assignor of one-half to Augustus J. Archambo, Minneapolis, Minn.

917,386. Gas-Valve. Marion F. Webb, Birmingham, Ala.

917,395. Combined Waste and Overflow. James B. Wise, Watertown, N. Y.

917,408. Safety Gas-Cock. Edward D. Booz, Baltimore, Md.